

Health
and Physical Education
for the
Elementary School
Classroom Teacher

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To
our children

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Foreword

NO KNOWLEDGEABLE PERSON today questions the responsibility of the elementary school for providing health and physical education instruction to children. There is a recurring question, however, which concerns educators: How adequate is the current curriculum in this area and how effective is the instruction? After reading this book, one raises this question again in view of personal recollections of the limited scope and nature of the health and physical education instruction experienced in the elementary school. Many, if not most, teachers of children will agree that this instruction is greatly in need of improvement in view of available knowledge.

Any student of our "social scene" is sensitive to the growing public concern about personal health and physical fitness. Our same public is interested in foreign language instruction and improved science programs in our schools. The impact of these foreign language and science interests is evident today in elementary schools. It seems reasonable to predict, therefore, that a growing public occupation with its own health and physical fitness will encourage a critical appraisal and reconstruction of each elementary school's curriculum if this is not already taking place. The authors, moreover, have shown faith that elementary school classroom teachers and principals, because of their dedication to the welfare of children, will see that this job is done.

This book is unique in that it incorporates into a single volume a discussion of both health and physical education. To elementary school personnel this is most acceptable for several reasons. One reason is our tendency to think in terms of incorporating broad fields into the curriculum. Most elementary school general curriculum texts, for example, contain chapters dealing with *social studies, language arts, health and physical education,*

and other broad fields. Even more important, elementary school educators have long been aware of the common goals of health and physical education and thus of the need to develop concepts, information, skills, attitudes, and appreciations where direct relationships exist.

The reader will note the apparent practical value of this book. The authors work daily with prospective teachers and public school personnel and are, therefore, intimately aware of our elementary school situations and of teachers' needs to meet the challenge of developing good education for children in the area discussed. Among other helps, the book provides to the teacher clearly stated instructional objectives, an accounting of the full range of activities included in a good program, delineations of the learnings to be sought, descriptions of and sources for teaching materials, equipment, and needed services, identification of the more helpful instructional practices and evaluation procedures, and definitions of needed facilities.

The authors are committed to the concept of individual differences and thus to the principle of individualizing instruction. This is not a mere verbal commitment since they summarize knowledge about child growth differences, define means for assessing a child's health, physical fitness, and motor skills, and then explain how this knowledge is applied when teaching.

Finally, the extensive research findings the authors have called upon to project their recommendations are impressive. The expression "the book is loaded" is applicable. Any educator who reads it will feel "loaded" with usable knowledge about children. This should be an invaluable text, therefore, for preparing prospective teachers, for the professional library of elementary education personnel in the field, and for public school districts attempting to appraise and improve the health and physical education curriculum for boys and girls.

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Preface

TWO PRESIDENTS OF THE United States, Dwight D. Eisenhower and John F. Kennedy, expressed serious concern over the apparent physical unfitness of too many American children and youth. Initiated by President Eisenhower and continued by President Kennedy, a President's Council on Youth Fitness was formed to take appropriate steps to correct this situation. Subsequently, President Kennedy changed the name of this council to the President's Council on Physical Fitness to stress that the fitness problem was primarily physical in nature and was general to the total population, adults as well as youth.

President Kennedy wrote in the December 26, 1960, *Sports Illustrated*: "For the physical vigor of our citizens is one of America's most precious resources. If we waste and neglect this resource, if we allow it to dwindle and grow soft, then we will destroy much of our ability to meet the great and vital challenges which confront our people. We will be unable to realize our potential as a nation."

At its inception and since, the Council has considered the schools and colleges as the decisive force in the national effort to strengthen the physical fitness of our youth. It is logical that this process must start as early as possible in the life-span of each individual. As a consequence, it must constitute an essential challenge directed at the elementary school, starting at grade one and even kindergarten.

Physical fitness is but one aspect of fitness; however, it is a very significant aspect and one which is basic to other forms of excellence. Efforts to improve physical fitness should be carried on with full regard for all fitness qualities—spiritual, mental, emotional, and psychological. Further, while they are the basic vehicles for improving physical fitness of children in schools, health and physical education should strive to achieve

other objectives appropriate for these fields. Thus, this book presents the total aspects of health and physical education in elementary school grades one to six, while placing emphasis on the basic need for physical fitness development.

The book is unique in two ways. First, it is directed specifically to the elementary school classroom teacher, who is usually involved in conducting health education and physical education for the children in her room. It is believed, however, that the material presented will also be useful for professional health and physical educators concerned with elementary school programs.

Second, the book combines both health and physical education in a single volume. This is done in the belief that a concentrated text in these areas would be especially useful for the classroom teacher. As a consequence, the material included in the book is quite selective. Efforts have been made to present the most useful items for achieving the various objectives sought through health and physical education. Emphasis on practical applications has been consistent throughout.

Health and Physical Education for the Elementary School Classroom Teacher may be especially useful for the following: (1) as a practical guide (desk copy) for all elementary school teachers and elementary school physical educators and supervisors or consultants; (2) as a teacher-training textbook in a course for classroom teachers in which health and physical education are combined (such a course may be useful when overcrowded curricula make it desirable to concentrate efforts in these areas); (3) as a text adopted jointly by teacher-training instructors who are responsible for separate courses in health education and physical education for classroom teachers; (4) as a textbook in courses for professional health and physical education teachers and supervisors or consultants; (5) as a resource book for in-service training programs for classroom teachers; and (6) as a reference book for school administration courses in elementary education.

For the convenient use of the elementary school classroom teacher, this book is divided into four parts. Part One, Orientation, contains two chapters: the first chapter discusses needs and objectives of health and physical education; the second chapter presents child growth and individual differences. In the latter chapter, child growth materials are utilized to develop and justify a number of principles for application to health and physical education in the elementary school.

Part Two, Health Education, contains four chapters: health services, healthful school environment, health instruction, and methods and resource materials. In this part, the classroom teacher will find listed a great deal of resource material and visual aids which may be utilized in health education programs. Much of this material may be obtained free or at

little cost. Various health agencies in the community, state, and nation that may help with health education are discussed.

Part Three, Physical Education, contains five chapters: the physical education program; exercise, stunts, and apparatus; games and sports; rhythms, singing games, and folk dances; and evaluation. These chapters contain practical materials from which the classroom teacher can plan and conduct his or her physical education program. The chapter on evaluation brings together many tests that the classroom teacher may use, and discusses their applications to the physical education program.

Part Four, Administration, contains a single chapter on administrative considerations. The many administrative, curricular, and teaching problems encountered in elementary school health and physical education are identified, and possible solutions are discussed. Among the topics considered are time allotments, facilities, equipment and supplies, health responsibilities, health organizations and associations, rating the health education program, use of pupil leaders and team teaching, grouping for physical education, and conduct of intramural sports programs.

H. HARRISON CLARKE
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Part One



Orientation

Needs and Objectives

THE PURPOSE OF EDUCATION is to provide experiences for boys and girls by which they can grow physically, mentally, socially, and emotionally, and by which they can adapt themselves to changing conditions of living. Present-day education is concerned with the well-balanced development of the whole child, not just of his mentality, important as that is. This recognition of the need for total development is more important today than ever before, because living in the present is becoming more and more complex, resulting in all sorts of intricate situations which are constantly involving other people.

Today's mode of living, as contrasted with that of earlier times, shows a radical change in every phase of man's existence; and, naturally, much of this is transferred to boys and girls in elementary schools. Children no longer need strength and endurance to do chores and help with the many tasks of daily life. They do not need to walk or ride a horse or bicycle to school, for a bus will deposit them at the school's door. They are insidiously tempted to sit before the television set during their leisure rather than enter into vigorous play and other physical activities. Most children live in crowded neighborhoods and are in constant social contact with others. Their diet consists more and more of delicate, refined foods. There has been a noticeable lessening of constraint, discipline, and effort.

And living will continue to change; all men and women, boys and girls, are directly and immediately affected by the gigantic technical strides accomplished by science. Such advances used to be few and far between; their impact came so slowly that a person was barely aware of any change in his own lifetime. In the October 7, 1957 issue of *Life*, the following statement appears: "Today the progress of 100,000 Stone Age years is surpassed in a single year and the great accomplishments of the

last century are eclipsed by those of the last decade." Chancellor William P. Tolley¹ of Syracuse University pointed up this issue by saying that 90 per cent of the scientists of all times are presently alive. He stated that we must expect to live with ever-increasing changes in the future, and he pleaded that education learn to adjust to these changes as they occur and not years and years later.

Further, today we live in a state of constant international tension. Mighty ideologies are in violent conflict. Our nation, as is true of all other nations, must maintain a state of total preparedness to resist potential powerful aggressors. Within a matter of hours—minutes, almost—enemy missiles and aircraft with their lethal loads can be over military and industrial targets in our country. Americans pray that these international problems can be solved without recourse to war; but to ignore the possibility of all-out conflict would be extremely short-sighted. Much as educators dislike to admit it, the schools must contribute their basic share toward national survival, beginning with their work with the youngest children and continuing through the college age.²

As a consequence of these vital considerations, educators must reassess their objectives to keep pace with our rapidly changing society and to meet the challenges of the future; they must revise their curricula in ways which will most effectively realize these objectives and which will adapt content to new knowledge as it is produced; and they must adopt methods which will result in the maximum total development of children and which will provide the best learning experiences for them. This first chapter will present the needs and objectives of physical education and health education for boys and girls in elementary schools.

HISTORICAL PERSPECTIVE OF PHYSICAL EDUCATION

Although not then recognized as such, the utilization of certain physical education activities originated with primitive man. Essential for his survival was the ability to hunt, fish, care for crops, and fight the enemy. The learning of such skills, therefore, was a basic part of his education; the development and conditioning of the body through vigorous, directed exercise were vital for efficient performances. The development of the strength and endurance of the body has been generally recognized through the ages as essential for effective living.

The Greeks, especially the Athenians of the fifth century B. C., deliberately employed exercise of different types to develop a beautiful and harmonious body. They believed that physical development was closely

¹ 1961 Annual Convention, American Association for Health, Physical Education, and Recreation, Cincinnati, Ohio.

² H. Harrison Clarke, "Physical Education and National Survival," *Education*, 75, No. 2 (October 1954), 96.

associated with mental effectiveness, and that such development was essential for the education of the total individual. "Following the decline of Athens, physical education went into an eclipse lasting for many centuries. Limited largely to the training of warriors by the Roman Empire, and subject to the devastating concept of the honored spirit and denounced body of the Middle Ages, physical education did not again achieve cultural significance until the Reformation of the sixteenth and seventeenth centuries."³

Such early European philosophers as Rabelais, Montaigne, de la Salle, and Rousseau and England's John Locke promulgated the concept of the whole child; they contended that the child cannot be separated into a mental, social, and physical trichotomy—that he is a unity with action and interaction among all parts. As a consequence, they advocated a limited program of physical activity for the educated person. During this period, too, physical education emerged formally in Europe; definite systems were developed, largely associated with military preparedness. Two of these systems, the gymnastic-oriented German and the calisthenic-oriented Swedish, had strong influences on the physical education field in America.

The first two gymnasias in the United States were opened in 1825 at the Round Hill School, Northampton, Massachusetts, and in 1826 at Harvard University. The apparatus, activities, and methods were direct copies of the German system developed by Frederick Jahn. The Swedish system of medical gymnastics, promulgated by Per Henrik Ling, was first utilized by physicians in America around 1850. Although remnants of these systems still exist in physical education, neither one of them, nor others introduced from abroad, gained more than a temporary foothold in educational institutions of the United States.

With few exceptions, the physical education leaders in this country between the Civil War and World War I were trained in medicine. These men and women were attracted to this field because of the potential health values of proper physical activity—a form of preventive medicine. These physicians were interested primarily in the physical fitness aspect of physical education, consisting of the care and development of the body. Further, they felt that such care and development contributed dynamically to the individual's mental, emotional, and social effectiveness. During this period, also, such great pioneers in education as Horace Mann, Henry Barnard, and Herbert Spencer stated this same point of view; they argued that the care of the physical body should be given consideration along with intellectual effort.

The tragic lesson of World War I, when many of our youth were found physically unfit to defend the nation against a powerful foe, re-

³ H. Harrison Clarke and David H. Clarke, *Developmental and Adapted Physical Education* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), p. 2.

sulted in a tremendous expansion of physical education in American schools. Prior to this time, only three states, California, Ohio, and North Dakota, had state laws requiring this subject in their schools. By 1932, 36 states, representing 90 per cent of the population, had enacted such laws.⁴

Between the world wars, medical leadership in physical education waned, being rapidly transferred to men and women trained in education but with backgrounds in the biological sciences. A consistent effort was made to align physical education with total school purposes. As a consequence, multiple objectives were proposed and established for this field. Unfortunately, in this process, the physical fitness of boys and girls became somewhat incidental to the program as a whole. Despite this latter fact, however, physical education programs based upon meeting the individual physical fitness needs of boys and girls were inaugurated and developed in a number of schools in New York State, New England, and elsewhere; in practice, these procedures proved unusually effective.

Exercise as therapy also originated during the early history of mankind. Records and drawings have been found that present the use of crude corrective exercises by the Chinese about 3000 B. C. There is evidence of the use of exercise, massage, and baths by the early Egyptians, Hindus, Greeks, and Romans. The use of exercise as therapy was also advocated by early European physicians. In America, the physician pioneers of this field after the Civil War utilized corrective exercise widely, the process being largely based on Ling's system of "medical gymnastics." During World War II, the medical departments of the armed forces employed a wide range of physical education activities in the treatment of convalescent patients. The Veterans Administration has carried this practice to a new high point as it is applied to the chronically disabled.

OBJECTIVES OF PHYSICAL EDUCATION

Quite properly, in education, it is commonplace to state objectives; such statements have been prepared by individual teachers, by school systems, by educational commissions, and by authors of books such as this one. The statement of objectives is essential in order to give basic direction to the selection of activities and methods which together will comprise the curriculum and determine the manner of presentation to children. A statement of objectives is the first step that the classroom teacher must take if she is to be maximally effective in helping children to grow and develop in desirable ways. And, so it must be for physical education.

There is a danger in presenting objectives for a field such as physical education. The danger is that the teacher will make the error of sep-

⁴J. F. Rogers, *Statewide Trends in School Hygiene and Physical Education* (Washington, D C : Department of the Interior, Office of Education, 1934).

arating individuals into parts, each part related to a stated objective. For teaching purposes, however, the determination of objectives is the only convenient way of identifying areas of fundamental importance. Such designations should be considered as methods of analysis; any tendency to accept them as mutually exclusive categories should be avoided. In operation, the approach to the boy or girl should be in terms of his total being. With these considerations in mind, the following three physical education objectives are presented.⁵

Physical Fitness

Physical fitness is the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and to meet unforeseen emergencies. Thus, physical fitness is the ability to last, to bear up, to withstand stress, and to persevere under difficult circumstances where an unfit person would give up. So, physical fitness is the opposite to being fatigued from ordinary efforts, to lacking the energy to enter zestfully into life's activities, and to becoming exhausted from unexpected, demanding physical effort.

Organically, man is a muscular creature. Thus, boys and girls, as well as their teachers, are meant to be physically active. They possess an organism designed for movement with the neuromuscular mechanisms which will produce movements of infinite variety and magnitude. When children succumb to a state of physical inactivity, as from disease, or give way to the lazy ease and comfort of modern living, they pay a price in decreased efficiency in every part of their being. Remove physical activity from life, and atrophy not only of size but of function results. Experiences become limited. Muscles become small and weak and fatigue easily.

The definition given implies that physical fitness is more than just "being well," that it is different from resistance to or immunity from disease. It is a positive quality extending on a scale from death to "abundant" life. All living individuals, thus, have some degree of physical fitness, which varies considerably in different people and in the same person at different times. In accordance with this concept, boys and girls who are not sick, who are free from defects and handicaps, and who are adequately nourished may still exhibit physical unfitness; they may be muscularly weak and/or lacking in stamina.

Motor Skills

The learning and practice of motor skills are essential in order to achieve worthwhile objectives. The true basis of all physical education is

⁵ These objectives are adapted from those proposed in: H. Harrison Clarke, *Application of Measurement to Health and Physical Education* (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959), chap. 1.

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⁴J. F. Rogers, *Statewide Trends in School Hygiene and Physical Education* (Washington, D C : Department of the Interior, Office of Education, 1934).

to acquire and use skills that are essential for physical fitness, for building character, and for utilizing leisure time.

Physical activities differ not only in their educational content, but also in their potential contributions to specific objectives. Moreover, the contributions that any one physical activity can make are not confined, as a rule, to a single objective but may apply in some degree to all of them. In teaching skills, therefore, the elementary school classroom teacher should understand the educational values of the physical activities served by the skills.

An additional responsibility in skill teaching exists in the elementary school, especially the lower grades. Many of these younger children have not acquired such motor skills as running, jumping, dodging, hopping, skipping, climbing, throwing, and catching necessary for performing rhythmic activities and individual, group, and team sports. Thus, the classroom teacher should take appropriate steps to see to it that all children acquire these basic skills.

Social Efficiency

The term "social efficiency" indicates those traits usually included in the concepts of character and personality. It has a definite social implication, since in our democratic society the effects of one's actions upon others are of primary concern. Thus, a socially efficient person is one who functions harmoniously within himself, in his relationships with others, and as a member of the society of which he is a part.

Participation in many physical education activities necessitates numerous person-to-person contacts; when properly directed, these contacts result in and promote desirable social relationships. Thus, when a boy shoves another in a game, the effect is immediately felt; it is a concrete situation that is meaningful to him, the boy shoved, and, in varying degrees, to all members of both teams. Appropriately conducted physical activities develop traits that are fundamental for future citizens of a democracy—traits that are basic to the social development of boys and girls. These are: courage, cooperation, persistence, initiative, resourcefulness, and will power; respect for the rights of others, for authority, and for the rules of the game; also, self-respect, loyalty, justice, self-confidence, sacrifice of self for the good of the group, aggressiveness, followership, and leadership.

Further, social efficiency embraces moral and spiritual values. The Educational Policies Commission of the National Education Association⁶ defined these values as those which, when applied in human behavior, "exalt and refine life and bring it into accord with the standards of con-

⁶ Educational Policies Commission, *Moral and Spiritual Values in the Public Schools* (Washington, D.C.: National Education Association, 1951).

duct that are approved in our democratic culture." Among moral and spiritual values are: recognition of the supreme importance of the individual, moral responsibility for one's conduct, voluntary cooperation through common consent, devotion to truth, and emotional and spiritual experiences transcending the materialistic aspects of life. In physical education, boys and girls can learn to compare the worth of one desire as it conflicts with another desire, or their own desires as they conflict with the desires of other children. They can do this by facing sports and games situations which involve moral choices among competing courses of action, and by thought and discussion about the possible results of one course of action as weighed against another course.

Culture

At first impression, culture may seem to be an odd objective to propose for physical education. But, before passing judgment, consider its definition and rationale. Culture is here defined as the enrichment of human experience through physical activities that lead to better understanding and appreciation of the environment in which boys and girls find themselves, and the development of recreational competency for leisure.

Liberal culture is interpreted broadly as "one's stock of appreciations," including all aspects of living that will improve one's understanding and enjoyment of people and events in his society. Examples from physical education are: the grace, rhythm, and creative expression of the dance, together with its association with the past and present in this and other countries and its racial and folklore significance; an understanding and appreciation of the human body, both biologically and aesthetically; appreciation of skilled performance on the part of others; the historical background and cultural associations of many physical education activities.

Cozens and Stumpf have produced a scholarly exposition on sports in American culture, which includes this passage: "Sports and physical recreation activities belong with the *arts* of humanity. Such activities have formed a basic part of all cultures, including all racial groups and all historical ages, because they are as fundamental a form of human expression as music, poetry, and painting. Every age has had its artists and its amateurs, its adherents and its enemies. While wars, systems of government, plagues and famines, have come and gone in the long record of mankind, these fundamental things have always been present in greater or lesser degree." ¹ Further, down through the ages, the human body has been the subject of art masterpieces; athletic youth has frequently been portrayed, particularly in sculpture. In recent times, R. Tait

¹ Frederick W. Cozens and Florence S. Stumpf, *Sports in American Life* (Chicago, Ill.: University of Chicago Press, 1953), p. 1.

McKenzie, physician and director of physical education at the University of Pennsylvania before his death, added new laurels to this art form.⁸

Sports and games have become an integral part of the great American scene. Boys and girls should be developed into good spectators. This process includes the appreciation of an excellent performance, an understanding of the rules, a tolerance toward the difficulties of the officials, and an ability to converse intelligently on athletic subjects.

Finally, physical education is one of several education fields that contributes to the recreational competency of boys and girls. Many sports have real value as leisure-time activities. Their skills should be taught and their use encouraged during out-of-school hours. Certainly, recreation is a vital phase of today's life.

VALUES OF PHYSICAL EDUCATION

The great changes in today's mode of living and the tremendous problems associated with the education of boys and girls for a very complex society, where mentality and intricate skills play a dominant role, have resulted in frequent questioning of the need for physical education. The detractors of this field have been prone to take a narrow, pragmatic approach. They point out that little strength and endurance are needed for doing one's job in our present state of automation. So, why exercise? The problem, however, is not that simple.

The individual should be regarded as an indivisible unit, acting and reacting as an integrated whole. Man cannot be divided into separate components. The physical status of boys and girls, as well as their day-by-day physical activity, affect their physical well-being, their mental applications, their emotional stability, their psychological adjustment, and their social efficiency. These are not just the biased assumptions of a physical educator, but can be supported, in part at least, by research evidence produced by scientists in medicine, psychology, anthropology, growth and development, nutrition, education, and physical education, as will be seen below.

Physical Well-being

While Kraus coined the phrase earlier, Kraus and Raab⁹ extensively developed the concept of hypokenetic disease, defined as a "whole spectrum of inactivity-induced somatic and mental derangements." After reviewing reports of medical studies published in the United States,

⁸ Christopher R. Hussey, *R. Tait McKenzie: A Sculptor of Youth* (Philadelphia, Pa.: J. B. Lippincott Company, 1930). The February 1944 issue of the *Journal of Health and Physical Education* is devoted to McKenzie's life and includes illustrations of his work.

⁹ Hans Kraus and Wilhelm Raab, *Hypokenetic Disease* (Springfield, Ill.: Charles C. Thomas, 1961).

Canada, England, Scandinavia, and Austria, these physicians concluded, "... the overwhelming majority of published reports, based on statistical criteria and techniques, seems to lend strong support to the concept that a relationship between exercise habits and the susceptibility to functional and degenerative diseases of the myocardium does indeed exist."¹⁰ In agreement with this observation, Hein and Ryan, of the American Medical Association, after evaluating pertinent scientific evidence, state: "A high level of physical activity throughout life appears to be one of those factors that act to inhibit the vascular degeneration characteristic of coronary heart disease, the most common cause of death among cardiovascular disorders."¹¹ And deaths from cardiovascular diseases constituted over half of all deaths in the United States in recent years.

As an example of several studies that could be cited on the relationship of physical activity to coronary heart attacks is the one by Morris and Raffle¹² in England. These investigators checked the incidence of this disease among 25,000 drivers and conductors of busses in London. The busses were double-deckers, so that the conductors' work required a good deal of exercise, while the drivers were physically inactive. The mortality rate from coronary heart attack was twice as high for the sedentary drivers as for the active conductors. Further, the disease was not so severe in the active and had a lower mortality rate among them when they did suffer such attacks. It is not the athlete's heart we need to worry about, but the loafer's heart.

Also, regular exercise can play an important role in developing and maintaining a healthy and well-functioning circulatory system. Similar beneficial effects can be realized from proper exercise in the efficient functioning of other organic systems of the body. Other disease entities more frequent in the sedentary than in the active are diabetes, duodenal ulcers, bronchial asthma, and neuromuscular tension. The appetite, gastric and intestinal digestion, and bowel functions are in general better in those persons who are in good physical condition than in those who are not.

Low back pain is much more prevalent in the sedentary than in the physically active. In an analysis involving 5,000 patients with this ailment, Kraus¹³ reported that 80 per cent were unable to pass his simple tests of minimum muscular fitness.¹⁴ The large posture muscles of the trunk

¹⁰ *Ibid.*, p. 98.

¹¹ Fred V. Hein and Allan J. Ryan, "The Contributions of Physical Activity to Physical Health," *Research Quarterly*, 31, No. 2, Part II (May 1960), 279.

¹² J. N. Morris and P. A. B. Raffle, "Coronary Heart Disease in Transport Workers," *British Journal of Industrial Medicine*, 9 (October 1954), 260.

¹³ Hans Kraus, et al., *Hypokinetic Disease: Role of Inactivity in Production of Disease* (New York: Institute for Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center).

¹⁴ See page 313 for a description of these tests.

are frequently involved in a vicious cycle consisting of: inactivity, muscular deficiency, tension, pain, enforced inactivity, and so on and on.

Gallagher¹⁵ has stressed the value of physical activities in the adolescent's development, he cites the frequency with which strengthening exercise rather than rest is appropriate for the person below par in health. For medical practice, he states: "The evaluation of strength, the determination of the disproportion between strength and probable stress, and the increase of strength through exercise can at times constitute better management than a regimen which focuses upon the ailment, emphasizes rest, and ignores the facts regarding strength development in exercise." Dr. Paul Dudley White, who was President Dwight D. Eisenhower's heart specialist, has written: "Proper exercise is as essential to good health as eating and sleeping."¹⁶

Weight Control

Physical inactivity and overeating are the most important factors explaining the frequency of obesity in modern society. Natural selection, operating since civilization began, made humans physically active, well prepared to be hunters, fishermen, farmers, and warriors. The regulation of food intake was never designed to adapt to the highly mechanized, sedentary conditions of our times. Adaptation to these conditions means that most individuals must either increase considerably their physical activity or inflict diet-control practices upon themselves if they are to control their weight.¹⁷

Obesity is a serious problem. Excess weight and long life are not well associated. Overweight persons are more susceptible than thin ones to many fatal diseases and tend to die younger than those of normal or less than normal weight. In addition, obesity detracts from one's aesthetic appearance and hinders effective participation in sports and other physical activities.

Jean Mayer,¹⁸ a Harvard University nutritionist, has pointed out that the role of exercise in weight control has too frequently been minimized. Fat piles up gradually on most individuals in sedentary occupations. Proper eating habits are essential in order to avoid this circumstance. But consistent daily exercise helps, too, as exercise uses energy and burns calories.

The simple arithmetic of balancing the number of calories eaten against the number of calories needed by the body for its maintenance

¹⁵ J. Roswell Gallagher, "Rest and Restriction," *American Journal of Public Health*, 46 (November 1956), 1424.

¹⁶ Paul Dudley White, "Man's Best Medicine," *New York Times Magazine* (June 23, 1957).

¹⁷ Jean Mayer, "Exercise in Weight Control," *Exercise and Fitness*, Chrm., Seward C. Staley (Chicago, Ill.: Athletic Institute, 1960), p. 120.

¹⁸ *Ibid.*, p. 110.

and to provide for its activity is a simple explanation of obesity when fattening foods are taken in excess of these bodily demands. This basic premise holds true. But rather large differences exist among individuals in the rate that calories are burned. Apparently, there is a genetic disposition for some to gain weight more easily than others; this phenomenon is probably due to human metabolic differences—the manner in which the body disposes of food calories after they are eaten. For these individuals, the “battle of the bulge” is an arduous and continuous one. This battle can be supported effectively by vigorous circulatory endurance activity; this type of activity not only burns fuel but improves metabolic processes.

Mental Alertness

A number of studies support the belief that physical fitness is related to the child's mental alertness. This assertion does not imply that physical traits and intelligence are significantly related, but, rather that a person's general potential, *for a given level of intelligence*, is increased or decreased in accordance with his degree of physical fitness. Studies have shown that the individual is more prone to be mentally alert, to be vigorous in his applications, and to suffer less from efficiency-destroying fatigue when he is fit than when he is unfit.

The great psychologist L. M. Terman concluded, after 25 years of studying intellectually gifted children, that: “The results of physical measurements and the medical examinations provide a striking contrast to the popular stereotype of the child prodigy, so commonly predicted as a pathetic creature, over-serious, undersized, sickly, hollow-chested, nervously tense, and bespectacled. There are gifted children who bear some resemblance to this stereotype, but the truth is that almost every element in the picture, except the last, is less characteristic of the gifted child than of the mentally average.”¹⁹ In Terman's initial monumental study,²⁰ when his gifted subjects were young, symptoms of general weakness were reported by the schools nearly 30 per cent less frequently for the gifted than for the control group.

A number of recent studies have pointed to this fact of greater mental alertness being related to physical fitness elements. One illustration will suffice here. From the Medford Boys' Growth Project, Clarke and Jarman²¹ analyzed the academic achievement of boys at ages 9, 12, and

¹⁹ Lewis M. Terman, ed., *Genetic Studies of Genius. IV. The Gifted Child Grows Up* (Stanford, Calif.: Stanford University Press, 1947), p. 24.

²⁰ Lewis M. Terman, ed., *Genetic Studies of Genius. I. Mental and Physical Traits of a Thousand Gifted Children* (Stanford, Calif.: Stanford University Press, 1925), p. 211.

²¹ H. Harrison Clarke and Boyd O. Jarman, “Scholastic Achievement of Boys 9, 12, and 15 Years of Age as Related to Various Strength and Growth Measures,” *Research Quarterly*, 32, No. 2 (May 1961), 155.

15 years, who had high and low scores on the Strength Index and the Physical Fitness Index tests.²² For each age and for each test separately, the high and low groups were equated by intelligence quotients. Quite generally, the boys with the high scores on the physical tests had significantly superior grades as given by their teachers and significantly higher averages on standard scholastic achievement tests.

Thus, improved mental alertness is enhanced as a consequence of a strong and enduring body, which provides a vigorous, fatigue-resisting organism. Dr. Paul Dudley White²³ has offered a further rationale for the effect of exercise on mental processes. This is that these processes are enhanced by exercise, as the brain, too, has arteries and needs good circulation for efficient performances. Valves in the veins help the circulation of blood; muscles in our legs and arms if kept in tone aid the veins in circulation by serving as a pump during exercise; and a diaphragm unhampered by fat below and above it permits free and vigorous action assisting circulation. Thus, mental alertness is favored by a good circulation of blood to the brain.

Personal and Social Adjustments

Among boys, especially, a positive relationship exists between physical elements and peer status. From the longitudinal growth study at the University of California, Berkeley, Harold E. Jones²⁴ found that boys high in strength tend to be well adjusted socially and psychologically; boys low in strength show tendencies toward social difficulties, feelings of inferiority, and other personal maladjustments. Utilizing a sociometric questionnaire, Clarke and Clarke²⁵ obtained a positive relationship between the peer status of boys 9 to 11 years of age inclusive and their body size and strength. In another study, these investigators²⁶ found that nine-year-old boys who expressed higher levels of aspirations in a grip-testing pattern were physically superior in size and strength to those who expressed an increase or a decrease in aspirations. Popp²⁷ reported that five teachers and administrators generally selected boys with high relative (to age and weight) strength scores as most nearly like sons they

²² See page 313 for brief descriptions of these tests

²³ Paul Dudley White, "The Brain Too Has Arteries," address at the Gold-Headed Cane Ceremony for the Graduating Class, University of California School of Medicine, June 1, 1962.

²⁴ Harold E. Jones, *Motor Performance and Growth* (Berkeley, Calif.: University of California Press, 1949).

²⁵ H. Harrison Clarke and David H. Clarke, "Social Status and Mental Health of Boys as Related to Their Maturity, Structural, and Strength Characteristics," *Research Quarterly*, 32, No. 3 (October 1961), 326.

²⁶ H. Harrison Clarke and David H. Clarke, "Relationship between Level of Aspiration and Selected Physical Factors of Boys Nine Years of Age," *Research Quarterly*, 32, No. 1 (March 1961), 12.

²⁷ James Popp, "Case Studies of Sophomore High School Boys with High and Low Physical Fitness Indices" (Master's thesis, University of Oregon, 1959).

would like to have; the reverse was true for boys with low relative strength.

Perhaps no other single factor means so much for a boy's social status among others of his age group as the ability to play well. It has been generally observed that skill in games is also a contributing factor for preadolescent girls. As children grow older, such skills become less and less important to girls; but if the boy lacks skill at any age, he may lose status with the group. The results of various studies justify these observations. For example, in the Berkeley Growth Studies, Jones²⁸ found that competitive athletic skills are among the chief sources of social esteem for boys in the period preceding maturity. After comparing superior and inferior third-grade pupils in motor proficiency, Rarick and McKee²⁹ concluded that children in the superior group were judged by their teachers to be active, popular, calm, resourceful, attentive, and co-operative, whereas children in the inferior group were more frequently judged as showing negative traits and were more often indicated as being shy, retiring, and tense.

An important by-product of the vigorous use of the muscles is its tranquilizing effect. Muscular fatigue, if not excessive, is one of the best sedatives known to man, according to some medical authorities. Consequently, nervous tension, so prevalent in our high-pressure society, is counteracted. Sleep is improved and insomnia is rare in those who exercise properly and regularly. With reduction of nervous tensions, man's peace of mind is fostered. Associated with this peace of mind are such spiritual values as patience, optimism, kindness, and courage.³⁰

Finally, but by no means least in importance, physical education through its sports and games provides living laboratory experiences in democratic human relations. All competitive sports and games present many situations requiring all kinds of individual and social responses, involving courage, loyalty, initiative, quick thinking, self-control, perseverance, poise under pressure, and the like. Close-knit team sports, such as basketball and soccer, offer a unique opportunity through their maximum reliance on rapidly changing group efforts for the development of cooperation as a desirable social trait.

Conclusion

In this section, the potential values of physical education have been presented, supported insofar as possible from research results. In so

²⁸ Harold E. Jones, "Physical Ability as a Factor in Social Adjustment in Adolescence," *Journal of Educational Research*, 40 (December 1946), 287.

²⁹ G. Lawrence Rarick and Robert McKee, "A Study of Twenty Third-Grade Children Exhibiting Extreme Levels of Achievement on Tests of Motor Efficiency," *Research Quarterly*, 20, No. 2 (May 1949), 142.

³⁰ Paul Dudley White, "As Old as One's Arteries: A Program for Positive Health," address at 102nd Annual Meeting of Young Men's Christian Association of Chicago, January 28, 1960.

15 years, who had high and low scores on the Strength Index and the Physical Fitness Index tests.²² For each age and for each test separately, the high and low groups were equated by intelligence quotients. Quite generally, the boys with the high scores on the physical tests had significantly superior grades as given by their teachers and significantly higher averages on standard scholastic achievement tests.

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²⁶ H. Harrison Clarke and David H. Clarke, "Relationship between Level of Aspiration and Selected Physical Factors of Boys Nine Years of Age," *Research Quarterly*, 32, No. 1 (March 1961), 12.

²⁷ James Popp, "Case Studies of Sophomore High School Boys with High and Low Physical Fitness Indices" (Master's thesis, University of Oregon, 1959).

tests and for all ages were at the 64th percentile for United States performance scores.³⁴

Generally, research has shown that the physical deterioration of children during elementary school years in the absence of proper physical education is inevitable. While these facts appear devastating, there is a favorable side to the situation. These poor American physical fitness test results are not necessary and are not prevalent in the presence of a strong physical education program. For example, Shaffer³⁵ reduced failures on the Kraus-Weber Test of Minimum Muscular Fitness to a marked degree in a few weeks through conditioning exercises. Forty-two per cent of 2,281 junior high school boys and girls in Johnstown, Pennsylvania, failed one or more of the test items in September; in November, the failures dropped to 8 per cent and were at 4 per cent at term's end. As a second example, Whittle³⁶ studied two groups of 81 twelve-year-old boys, one group had participated in good elementary school physical education programs and the other had not. Pronounced differences were found between these groups on physical and motor fitness tests.

Generally speaking, the physical education programs in the elementary schools of the United States are inadequate, and, in far too many instances, they are nonexistent. Thus, a fundamental problem exists for children of elementary school ages if the physical fitness of all American children is to be improved. No school can afford to wait until boys and girls reach high school before attending to their physical fitness. This period in life is crucial for proper physiological development.

A QUOTE WHICH SUMMARIZES

Play, recesses, and noon-hour activities are too frequently interpreted as physical education. As Helen Manley, former Director of Health, Physical Education, and Safety, University City, Missouri, has stated:

Physical Education is bigger than free play, exercise or recess, it is education. It recognizes that a child is an integer and as such cannot be torn into parts with mind, body and soul educated separately. The unique contribution of Physical Education is educating boys and girls through the physical, through activities. The body is the vehicle, the larger motor areas are the tools; the activities must promote organic vigor, neuromuscular skills and social experiences, provocative of democratic living. The elementary school child needs and wants activity. This is the age

³⁴ A summary of these three studies with references appears in: H. Harrison Clarke, "British, Japanese, Danes Top U. S. Youth," *Physical Fitness News Letter*, University of Oregon, Series VII, No. 5 (January 1961), p. 1.

³⁵ Gertrude Shaffer, "Editor's Mail," *Journal of Health-Physical Education-Accretion*, 22, No. 2 (February 1957), 6.

³⁶ H. Douglas Whittle, "Effects of Elementary School Physical Education upon Aspects of Physical, Motor, and Personality Development," *Research Quarterly*, 32, No. 2 (May 1961), 249.

doing, the effects of exercise on physical well-being, including organic soundness, physical fitness, and weight control, were demonstrated. Then, the interdependence of the physical, mental, psychological, and social aspects of the integrity of the total organism was developed. In making this statement, it is not intended to suggest physical education as a panacea, as, obviously, many factors contribute to our various performances. It may be contended, however, that physical education, properly conceived and presented, can contribute dynamically to the education of boys and girls.

PHYSICAL FITNESS OF AMERICAN CHILDREN

At the time this book was written, two presidents of the United States, Dwight D. Eisenhower and John F. Kennedy, had expressed deep concern over the alleged general physical unfitness of American youth. Each president manifested this concern by executive action in forming a President's Council on Youth Fitness; each charged his Council with responsibilities for alerting the public, the schools, youth-serving agencies, and local and state governments to this problem and for taking appropriate action to improve the situation.

Ample research evidence exists to demonstrate forcefully that the physical fitness of American children in general is deplorable as compared with that of the children of other countries. The first report of this sort, and the one which attracted President Eisenhower's attention, was made by Kraus and Hirschland.³¹ This report indicated that 57.8 per cent of Eastern Seaboard school children, especially in the elementary grades, failed to pass one or more of Kraus's simple tests of minimum muscular fitness;³² The comparable percentage was 8.7 for children in Austria, Switzerland, and Italy. High failure rates on this test by American children have also been found by other investigators in other parts of the United States.

The AAHPER Youth Fitness Tests³³ have been used to contrast the fitness of American children with that of their counterparts in other countries, including England, Denmark, and Japan. In all instances, the American children were revealed to have much lower typical performances on most of the seven items composing the test battery. For example, the American boys and girls exceeded the mean of the Japanese only on the test involving abdominal endurance; in the 600-yard run-walk, 98 per cent of the Danish boys and 99 per cent of the Danish girls exceeded the American averages; and British boys, on the average, for all

³¹ Hans Kraus and Ruth P. Hirschland, "Minimum Muscular Fitness Tests in School Children," *Research Quarterly*, 25, No. 2 (May 1954), 178.

³² See page 313 for description of this test.

³³ See page 325 for description of these tests.

1. That responsibility for health instruction rests with the teaching personnel of the schools, and that communicable disease control usually rests with the public health departments.

2. That all community health groups, as well as the entire staff of the public schools, should cooperate in the promotion of pupil health in the elementary schools.

3. That the classroom teacher should be considered the key person in the promotion of the school health activities in the elementary schools.

4. That, in meeting the total health needs during the school day, good, sound principles of healthful living should permeate the whole program of the elementary schools.

5. That the health education curriculum should form a part of the everyday experiences of pupils, a proposition which makes the health learning an integral part of the everyday living in the home, school, and community.

HISTORICAL ASPECTS OF SCHOOL HEALTH²³

The three phases of the modern school health program, namely, healthful school living, health education, and health services, had their conception during the nineteenth century. The first phase, healthful school living, was called "school hygiene" during the nineteenth century; publications issued at this time indicated a primary concern with problems of school construction and sanitation. In 1837, Horace Mann discussed the problem of school hygiene in his First Annual Report. After the Civil War, and up to the beginning of the twentieth century, progress in this area of the school health program continued at a slow pace. It was not until after the year 1908 that growth in school hygiene began to be noticed. At about this time, too, community groups and educators began to urge that new school buildings include gymnasiums, shower rooms, swimming pools, lecture rooms, and health rooms. Increased effort was placed on improved lighting and ventilation, safe water supply, and adequate waste disposal facilities. Further, emphasis was placed on the prevention of communicable diseases and better provisions for school lunches.

The National School Lunch Act (Public Law 396), passed by the Congress in 1946, served as an impetus for the development of modern school kitchens and cafeterias throughout the United States. This act made available federal funds for the provision of adequate food, maintenance, and operation of nonprofit school lunch programs. This led to better lunch facilities and better methods of food handling. In order to protect the health of children, many schools added health examinations for teachers and employees. Educators also recognized that both the

²³ Kenneth E. Veselek, "Historical Steps in the Development of the Modern School Program," *Journal of School Health*, 29, No. 7 (September 1959), 262.

where interest and joy in activity are highest. There is no trouble motivating the program, it is a natural and can be used as a basis for integrating the whole curriculum. There are also extraordinary opportunities here for group consciousness, it is the age of belonging. It is the optimum time for teaching motor activities. Habits of locomotion are formed in childhood and skills in coordinated movement are learned best in preadolescent years. The whole field of body mechanics should be started at preschool age if a well-coordinated body is to be assured.

Physical Education as a part of education requires time in the curriculum, facilities for activity, a well-balanced progressive program and good teaching. Its objective is to develop in each child a body which will express for him his total self and to enable him to meet satisfactorily and pleasantly life's tasks because of his development in:

1. Strength and endurance
2. Body control and relaxation.
3. Social and spiritual consciousness

This development needs to start in the elementary schools and continue throughout the school years.³⁷

HEALTH EDUCATION IN ELEMENTARY SCHOOLS

Today, health and long life can be realized by most of our children. Conceivably, a whole population can reach a positive state of health through preventive medicine, proper health instruction, and good health attitude and practices. To achieve, or even approach, this result, the modern elementary school should participate cooperatively with community health services and the home. In this process, classroom teachers can help by providing an appropriate physical, mental, and social environment. They can also help effectively through good health education teaching, which presents a close relationship between adequate nutrition, sleep, rest, exercise, and the ability to live energetically, effectively, and happily.

The medical and dental associations, as well as the public and private health organizations, should guide the elementary schools in their assessment of the health needs of the elementary school children. To be free of disease, to be organically sound, and to be physically fit are not the whole picture of health, although they are certainly basic parts of it. The child is not healthy when he is sick or when he lacks physical stamina. A great deal is now known about the appropriate types of physical activity and their relation to the total health of an individual. However, education for health must still include a working knowledge of the function of the human body and the nature of disease, and must counteract the indifferences and prejudices which block the intelligent use of modern medical knowledge and practice.

A good philosophy of elementary school health education is based on recognition of the following facts:

³⁷ Helen Manley, "Elementary Physical Education," *Physical Education and School Athletics Newsletter*, 2, No. 17 (May 5, 1958), 2.

Of the 33 states with laws pertaining to health education in the schools, 25 have it as a required subject and 8 have it integrated with other subjects. Usually, in these laws, the subject matter includes many health topics. For example, Oregon includes such topics as personal health, structure and function of the body, choice and use of health services and products, community health and safety, control of communicable and noncommunicable diseases, safety, first aid and emergency care, nutrition, mental health, and family-life education.

The health service phase of the school health program had its conception near the end of the nineteenth century. In 1890, a health commissioner was appointed in Boston, and numerous medical "visitors" were also engaged to carry on health work in the schools. In 1899, Connecticut became the first state to pass a law relating to medical inspection in the schools. In 1903, Reading, Pennsylvania, appointed the first school dentist, and Bridgeport, Connecticut, employed dental hygienists for the schools. Today, about 92 per cent of the schools with a population over 2500 have some type of school health services. The health services generally included consist of screening examinations, immunizations, health counseling, dental and medical examinations, and emergency care and first aid.

The areas of healthful school living, health education, and school health services are constantly expanding throughout the country. They have the active support of professional organizations, such as American medical and dental associations, the American Association for Health, Physical Education, and Recreation, the United States Public Health Service, and the American Public Health Association. The future looks bright for the furthering of these services in the public schools.

SCOPE OF HEALTH EDUCATION

The major purpose of an elementary school health education program is to improve and maintain the health of the school-age child. The health program should include inspection and supervision of the physical, mental, emotional, and social environments of the pupil during his stay in the public schools. It also includes health instruction in the areas of nutrition, accident prevention, *personal and community health*, recreation, and physical education. The health needs of individual pupils should be discovered and brought to the attention of the parents or guardians as soon as possible. Indigent cases should be helped by the community, service organizations, or the appropriate medical or dental societies. The school health program is preventive medicine in practice.

A good elementary school health program should include emphasis on all the various phases of health. The needs of the elementary school child should be met by preventing disorders that can be detected at an early age; the attitudes and knowledges of health should be taught incidentally

mental and physical aspects of the health of boys and girls were greatly affected by the educational program to which they were exposed. Many schools began to revise their curriculums and teaching loads so that they would not be detrimental to the health of pupils and teachers. The term "healthful school living," being a broader term and implying a greater scope than "school hygiene," is now used to describe this part of the school health program.

Health education—the health instruction phase of the school health program—consists of teaching numerous types of health information, including safety education. As early as 1842, Horace Mann indicated the need for health instruction in the public schools. Physicians were also active in advocating the teaching of physiology and anatomy in the public schools at this time. The textbooks and courses in "hygiene" instruction between 1850 and 1880 were primarily concerned with physiology and anatomy. It was not until after 1880 that the interest in teaching health in the public schools really began to grow. This growth was due largely to the interest of such groups as the Woman's Christian Temperance Union, which began working toward laws requiring the schools in the various states to teach the effects of alcohol and narcotics on the human body. Between 1880 and 1890, the majority of the states passed such laws.

Several other developments occurred during the first half of the twentieth century which helped to strengthen the position of health education in the public school curriculum. The American Child Hygiene Association, formed in 1909, made significant contributions to the advancement of health education in the schools through its educational programs. In 1915, the National Tuberculosis Association initiated health programs. The results of draft rejections due to medical and health reasons during World War I gave further impetus to the development of the school health education program. In 1918, the American Child Health Association was formed; this organization was instrumental in giving the term "health education" to this field, the terminology which is in use today. The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, formed in 1911, pioneered in the formation of plans, objectives and curricula, and methods and materials for a sound health program for the schools. The American Public Health Association established qualifications for health educators in 1938 and has a School Health Section listed in its organization today. In 1948, the National Conference on Undergraduate Professional Preparation in Health Education, Physical Education, and Recreation established standards for the preparation of health education personnel. A large number of individual states have followed this example by establishing standards for curriculum content in the preparation of teachers.

in the prevention of communicable diseases; and provision for injury and emergency care of pupils while in school.

HEALTH EDUCATION DEFINITIONS²¹

Definitions reflect concepts and practices; as changes occur, definitions must be altered to incorporate new meanings. Some health education definitions have been adopted by a committee on terminology of the American Association for Health, Physical Education, and Recreation.

HEALTH. The definition of health proposed by the World Health Organization has been accepted by most health leaders throughout the world. This definition is: "Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease and infirmity."

SCHOOL HEALTH PROGRAM. The school health program consists of the procedures contributing to the understanding, maintenance, and improvement of the health of pupils and school personnel, including health services, health education, and healthful school living.

SCHOOL HEALTH SERVICES. School health services include those school procedures established to appraise the health status of pupils and school personnel, counsel pupils, parents, and other persons involved concerning health appraisal findings, encourage the correction of remedial defects, help plan for the health care and education of the handicapped children, assist in the prevention and control of disease, and provide emergency care for the sick and the injured.

HEALTH APPRAISAL. Health appraisal is that phase of school health service which seeks to assess the physical, mental, emotional, and social health status of pupils and school personnel through such means as health histories, teachers' and nurses' observations, screening tests, and medical, dental, and psychological examinations.

SCHOOL HEALTH COUNSELING. The procedures of school health counseling are those by which nurses, teachers, physicians, guidance personnel, and others interpret to pupils and parents the nature and significance of a health problem and aid them in formulating a plan of action leading them to the solution of the problem.

SCHOOL HEALTH EDUCATION. School health education is the process by which learning experiences are provided in order to influence knowledges, attitudes, and conducts related to individual and group health.

HEALTHFUL SCHOOL LIVING. Healthful school living designates the provision of a safe and healthful environment, the organization of a healthful

²¹ "Committee on Terminology in School Health Education," *Journal of the American Association for Health, Physical Education, and Recreation*, 22, No. 7 (September 1951), 14.

and directly throughout the entire elementary grades. The administrators should include health as a regular subject of the school curriculum and should give the classroom teacher full support in carrying out this assignment. Just giving lip service is not enough to promote a good health program. The areas included in health education in the elementary school follow.

HEALTHFUL SCHOOL ENVIRONMENT. Minimum standards for a healthful environment in the elementary school are frequently set by state boards of health; other standards may be established by public health departments, fire departments, and other state or community agencies. These standards are usually published or printed, so they are readily available to the classroom teacher and should be considered in setting up procedures and standards for any school.

The health environment of the school involves the following: sanitary condition of the water supply; food inspection for the cafeteria; fire protection, safe use of all facilities and equipment, including the gymnasium and playground; safe sewage and refuse disposal system; proper heating, ventilation, lighting, and acoustical conditions; adequate facilities for emergency and first-aid care and for temporary care of sudden illnesses; and adequate recognition of the health needs of the child, as associated with fatigue, rest, play, lunch-room practices, and emotional stresses.

SCHOOL HEALTH INSTRUCTION. The basic planning for health instruction should be done by the classroom teacher in relation to her particular class in the elementary school. The teacher should organize her teaching to include (1) health instruction materials adapted to the needs of the particular grade level, (2) a specific time allotment for health teaching in the elementary grades, and (3) the necessary references and teaching aids suitable for the teaching program proposed.

Health teaching areas should include safety education, nutrition, personal health, rest, sleep, exercise, posture, fitness, and community health. The health teaching should fit into place in a natural way; in so doing, the teacher should consider the health problems of her particular pupils. Some of these health problems may be solved in the home, but, certainly, others may be solved in the daily routine of the pupils during their days and weeks in school.

SCHOOL HEALTH SERVICES. School health service functions should be adapted to meet the needs of the individual school community; logically, the policies approved will be coordinated with the patterns of the medical services available to the pupil and his family. The functions should include: health appraisals of the elementary pupils as well as of school personnel, health counseling of pupils and parents, encouragement in the correction of remedial defects; counseling of handicapped children; aid

Accidents are now the most common cause of death in school-age children, as well as a source of many unnecessary, nonfatal injuries which result in many disabling and disfiguring conditions. Much can be done in a preventive way by classroom teachers to reduce this appalling toll of our young children. Teachers should take a leading role in educating the parents and the children in the prevention of these unnecessary accidents. Each school should maintain an annual and cumulative record of its accident statistics; these data should be studied to determine the epidemiology of injuries in order to set up a preventive program to insure a safer school environment. Community safety organizations offer great help to the schools in this preventive program.

The causes of accidental deaths for children in the age groups 5 to 9 years and 10 to 14 years⁴¹ appear in Table 1.2. From this table, it will be seen that motor-vehicle accidents are the principal source of death at all school ages. Drowning is the second largest cause of death for both age groups, although it occurs most frequently among the 10- to 14-year-olds. Deaths from firearms have a similar age pattern.

TABLE 1.2
Causes of Accidental Deaths by Age and Type of Accident
(By Per Cents)

<i>Age groups</i>	<i>Motor</i>	<i>Drowning</i>	<i>Firearms</i>	<i>Falls</i>	<i>Other</i>
5 to 9	44	18	18	4	16
10 to 14	39	24	8	10	19

In the school plant, the most hazardous places for accidents are associated with unorganized play activities. These accidents occur in many places, including the playground, hallways, auditoriums, classrooms, corridors, and playrooms. The classroom teacher can play a big role in the preventive aspects of accidents by her close supervision of pupils' free-time activities and by seeing to it that all equipment used on the playground and elsewhere is safely used.

HEALTH KNOWLEDGE, ATTITUDES, AND SKILLS

The origins of school health might well be called "the communicable disease discovery and preventive era," as this era provided the major impetus behind the employment of school physicians and nurses throughout the country. In those days, the menace of scarlet fever and diphtheria among elementary school children was very real and needed medical control in the schools. Between these epidemics, the health personnel concentrated on such nuisance diseases as pediculosis, scabies, impetigo, and ringworm. It was during this time, too, that communicable diseases

⁴¹ National Safety Council, *Accident Facts*, Chicago, Ill., 1960

school day, and the establishment of interpersonal relationships favorable to the best emotional, social, and physical health of the pupils.

HEALTH COORDINATION. Health coordination is the process of developing relationships within the school health program and between the school and community health programs which contribute to harmonious action in the solution of problems related to pupils' health.

SCHOOL HEALTH COUNCIL. A representative group of persons organized for the purpose of study, planning, and action aimed at the identification and solution of school health problems is known as a school health council.

SCHOOL HEALTH EDUCATOR. A person specially qualified to serve as a teacher, consultant, coordinator, or supervisor of health education in an individual school or school system is a school health educator.

SCHOOL HEALTH INSTRUCTION. School health instruction consists of those learnings and experiences which are consciously incorporated into the curriculum in order to educate the pupil in terms of better health attitudes, judgments, knowledges, and practices. The health activities which are experienced in the classroom with the cooperation of teachers and pupils should constitute the main core of the health education program.

ACCIDENTS

The nation's health needs can be studied by observing some of the vital statistics produced by the National Office of Vital Statistics, United States Public Health Service.⁴⁰ Table 1.1 shows the ten leading causes of death in the United States for all ages as contrasted with the age group 5 to 14 years.

TABLE 1.1
Leading Causes of Death in the United States

<i>Cause of death (all ages)</i>	<i>Rate. Number per 100,000</i>	<i>Cause of death (5 to 14 yrs.)</i>	<i>Rate: Number per 100,000</i>
1. Heart disease	366.4	1. Accidents	19.6
2. Cancer	147.4	2. Cancer and leukemia	6.7
3. Apoplexy (stroke)	107.1	3. Flu and pneumonia	3.8
4. Accidents	51.9	4. Congenital malformations	3.3
5. Diseases of infancy	37.0	5. Heart disease and rheumatic fever	1.5
6. Flu and pneumonia	36.6	6. Meningitis and meningococcal infections	0.8
7. Arteriosclerosis (hardening of arteries)	20.3	7. Vascular lesions of central nervous system	0.8
8. Diabetes	17.1	8. Chronic kidney disease	0.7
9. Congenital defects	12.0	9. Acute kidney disease	0.4
10. Cirrhosis of the liver	11.2	10. Appendicitis	0.4

⁴⁰ National Office of Vital Statistics, Public Health Service, Washington, D.C.: Department of Health, Education and Welfare, 1959 and 1961.

ness, with emphasis on good grooming, should be emphasized. Children of this age fatigue easily, so study of rest, sleep, and right kind of exercise should be stressed. Many girls are maturing and may menstruate during this period; thus, girls, especially, should study the physiology of menstruation. Girls start their adolescent spurt about two years before the boys; the bodily changes associated with maturity and adolescence should be stressed in health education.

SKILLS: Visual aids in health can be stressed in these grades because of children's interests in movies, television, and radio. Group discussions concerning health habits are effective. Skills in body grooming should be developed. *Activities which stress emotional health should be emphasized.* The teacher should give special attention to utilizing effective motivational techniques in order to create and maintain interest in health.

CURRENT TRENDS IN SCHOOL HEALTH

Beyer⁴² analyzed the significance of current trends in school health education. The term "trend" was defined as a "general prevailing movement, changing in a specific and indicated direction, and thus reflecting a recognizable change of tendency or emphasis." The identification of trends was made from a study of 300 references published on school and college health education during the period from January 1948 to May 1958. A total of 104 trends were identified; the ten highest were listed as follows:

1. Increasing recognition that the emotional health of the teacher influences the emotional tone of the classroom.
2. Growing acceptance of the health program as a vital and necessary part of the total educational panorama.
3. Emphasizing the importance of the health of all school personnel.
4. Increasing the opportunities for in-service education of professional personnel in the form of workshops and conferences.
5. Producing action in health education through the functional approach to health instruction.
6. Accepting the purpose of health education as a process which favorably influences knowledge, attitudes and practices.
7. Accepting the positive concept of health as a state of total well-being.
8. Organizing the school health program with the realization that the family has the primary responsibility for the health of the students.
9. Recognizing the value of the continuous observation and appraisal of students by all teachers.
10. Involving the classroom teacher to a greater degree as part of the health team in the health service program.

Those trends receiving the highest rankings in Beyer's study, which indicated that they were of utmost value and significance, should defi-

⁴² Mary K. Beyer, "The Significance of Current Trends in School and College Health Programs," *American Journal of Public Health*, 50, No. 12 (December 1960), 1934.

began to come under control through improved sanitation, immunization programs, and the discovery of the modern drugs such as the sulfonamides and the antibiotics. Today, the concept of physical development and personal health is much broader, as compared with the narrow concept of physiology and hygiene which it has replaced in the elementary school curriculum.

Today, many health problems still remain. It is not enough to provide a longer life-span, but these years must be made full and productive. To realize this end, it is essential to teach children to live effectively for their own welfare and for their values to the community and society.

The health knowledge, attitudes, and skills which should be characteristic of health instruction and health practices of elementary school boys and girls at the different school levels are given below.

Grades One and Two

KNOWLEDGE AND ATTITUDES: Should understand the value of a proper diet, the right amount of exercise and rest, the correct use of the tooth-brush, and the basis for spreading disease; should obey traffic signals and should apply good practice in crossing streets, should know something about the use of medicine and the danger of bottles with skull-and-crossbone labels, should appreciate the helpfulness of doctors, dentists, and policemen; should practice good health habits.

SKILLS: Should be able to brush their teeth and comb their hair; have developed enough strength to grasp and hold onto a horizontal bar and to perform tumbling stunts; hand-eye coordination is developing. Activities should include big-muscle activity; good posture should be encouraged; good food habits should be stressed.

Grades Three and Four

KNOWLEDGE AND ATTITUDES: Should know the meaning of medical and dental attention and some fundamentals of good nutrition. Reading difficulties may be apparent and may affect personal health if not corrected. Community health can be stressed in these grades, including instruction pertaining to problems related to water, food, air, and disease. These pupils like to make their own decisions about their health habits.

SKILLS: Can read textbooks on health; like to hear the truth about personal and community health and the quackery associated with some health products; greater skill with hands is evident, so drawings for health posters are possible. Teeth often need straightening; a visit to the dentist should be recognized as a good health practice.

Grades Five and Six

KNOWLEDGE AND ATTITUDES: Should understand the scientific approach in presenting personal and community health problems. Personal cleanli-

(2) relation of objectives to the various levels and kinds of power structure in the community; and (3) the concepts of leadership held by professional workers.

5. Evaluation of educational programs and methods by staff provides a supporting structure for introducing changes in content and methods. Evaluation in health administration is not easy to do. However, evaluation techniques may some day put an end to the fragmentation of learning about health. In some communities throughout the country, for example, four-week health campaigns or health days are considered adequate. School health education is a year-round job.

SUMMARY

In this chapter, the need for health and physical education in elementary schools and the education objectives that may be realized from programs in these areas were presented. The values of physical education from the standpoints of physical well-being, weight control, mental alertness, and personal-social adjustments were presented as viewed from the research literature. The physical fitness of American children was described as revealed from studies available. Attention was given to the place, purposes, and scope of health education in elementary schools, to the health knowledge and skills needed by children at these ages, and to the obstacles frequently encountered in conducting effective health education programs.

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nately be advanced by the classroom teacher; they should be considered guide lines to strengthen present programs and to direct future programs in school health education.

HEALTH PRINCIPLES AND APPLICATIONS

If an educational principle is sound, it should have wide applications. It is not specific to one situation and not the property of any one profession. The classroom teacher needs basic concepts to help her in understanding those situations and concepts which enable her to develop and use appropriate methods. Nyswander⁴³ developed five such principles which she considered pertinent chiefly to group learning situations. These principles follow.

1. *In every problem-solving situation there are two major processes at work: one, a process that is concerned with the task at hand; the other, a process dependent on the dynamic impacts of personality needs, perceived threats, and protective reactions of the members present.* Thus, every group situation has two dimensions, which may be analyzed separately for working purposes; the progress of the group should be known in terms of where the members are in each dimension. Further, on the basis of this analysis, the teacher should be able to predict the role she may usefully play in health education.

A practical implication from this principle is the provision of staff meetings which are educational opportunities; they should be the core of in-service growth of the educational staff. Typically, teachers work with persons from cultural patterns or levels in the community socially far distant from one another and possessing different values and attitudes; they are in no man's land until these differences in values and understandings of feelings about them are the common possession of the group.

2. *The perceptions of those who are to be taught furnish important data to be used in program planning.* Thus, a great need at present in health education is for studies of the perceptions of people. For example, data are needed to guide educators in formulating and carrying out programs in accident prevention and fluoridation.

3. *The planning process itself is an educational method which has the potentialities for stressing the major psychological factors which bring about change.* This principle brings the teacher into cooperative problem-solving situations. People do not easily give up something that they have helped to plan.

4. *Bringing people together to work on problems is a complex process involving: (1) analysis of the validity of the objectives for the group;*

⁴³ Dorothy B. Nyswander, "Education for Health—Some Principles and Their Application," *California's Health*, 14, No. 9 (November 1, 1956), 65

weight, and in size of organs; it also includes increasing functional faculties and powers of adaptation to varied environmental influences. Moreover, growth includes the maturation of some functions which at birth are present only as potentialities.¹

The ages of elementary school children of primary concern in this text are those from 6 to 12 years. To understand growth patterns at these ages, some connection must be made with earlier years so as to show the continuing process. Further, the adolescent period must be considered. The adolescent spurt occurs in all children, although it varies in time of occurrence and in intensity and duration from one child to another. In girls, the average period of this spurt is between 11 and 13½ years of age; in boys, it usually takes place about two years later. Thus, the adolescent spurt starts for many girls in the late elementary school grades; this spurt has also started for some early-maturing boys during this time. Adolescence has special significance for health and physical education, as every skeletal and muscular dimension of the body takes part in it, and as it profoundly affects the social and emotional responses as well as the behavior of boys and girls.

The source materials for this chapter were drawn generally from the broad area of growth studies conducted especially in the United States over the past half-century. For the most part, generalizations from many sources are made, rather than attempting a meticulous research review of each growth factor considered. While other references were consulted in presenting the significance of growth differences for physical education, much of this material, as it applies to boys, came from a growth study conducted since 1956 in the Medford, Oregon, public schools by one of the authors.² In this Medford project, approximately 100 boys have been tested annually at each age starting at 7, 9, 12, and 15 years; for cross-sectional analysis, 40 boys were also tested once at each of ages 10, 11, 13 and 14 years.

PHYSICAL GROWTH

Height

At birth, the average boy is taller than the average girl, but this difference is slight. During preschool years, gains in height are large. By the end of the first year, height has increased about 50 per cent over that at birth; by the end of the fourth year, it has doubled. However, by the time children enter the first grade, annual height increases have reached a fairly steady rate of approximately two inches a year.

The gain in height is consistent for most boys from 6 to about 13

¹ Alfred H. Washburne, "Growth: Its Significance in Medicine Viewed as Human Biology," *Journal of Pediatrics*, 22, No. 5 (May 1950), 765

² To be known henceforth, for purposes of easy reference, as the Medford Boys' Growth Project.

Chapter

2

Child Growth and Individual Differences

ELEMENTARY SCHOOL TEACHERS are quite aware that children in their classrooms are different from one another. These differences are diverse in kind and degree. There are differences between boys and between girls in successive grades, first, second, third, and up to the sixth and beyond. But there are still other vital differences. Boys in the same grade and girls in the same grade also differ from each other, despite the fact that their ages are similar—within a year, at least, for most of them. These differences are of various types, including their maturation, body build, body size, muscular strength, motor ability, physiological functions, behavior patterns, social adjustment, emotional stability, and mental aptitude. Certainly, the successful teacher must be able to recognize the most significant of these differences and to understand their implications for the child's physical education; and she must be able to make adjustments in the teaching process to meet the specific needs of each child as revealed by his particular pattern of growth and development.

Of course, an understanding and appreciation of the individual differences of children are essential for all phases of effective teaching. However, in this chapter only the growth and developmental traits of greatest significance for planning and conducting health and physical education programs will be considered. In doing so, normal growth curves of boys and girls will first be described; then the extent to which boys and girls differ from each other and from the typical boy and girl at each age and the nature of individual differences will be shown; and, finally, the significance of these differences for school health and physical education will be presented. Growth covers a multitude of factors, but there is a unity which binds them all together into an organismic totality. As observed in a growing child, growth includes increases in height, in

physique, the chief differences are that men have broader shoulders, narrower hips, longer legs, longer arms, and less adipose tissue. A consideration of these differences as related to the growth process follows.

SHOULDER-HIP DIFFERENCES. The differences between boys and girls in shoulder and hip widths occur at adolescence. In shoulder width, the boys follow the usual growth pattern by having a much greater spurt than do girls. However, for hip width, the opposite occurs, as the girls have a particularly large increase in this dimension.

LEG-TRUNK PROPORTION. In the preadolescent years, the differences in mean leg lengths of boys and girls of the same age are not significant; yet in adults, the leg length of the male relative to body length is greater than for the female. During adolescence, the major gain in height is due to growth of the legs and not so much to lengthening of the trunk.

ARM LENGTH. The arms of boys are consistently longer than the arms of girls; this situation is due largely to longer forearms found with boys. Unlike nearly all other physical differences between the sexes, this difference does not occur primarily during adolescence, but is already established at two years of age. It is further increased for boys by a constantly greater rate of growth from this age to adolescence.

WIDTH-LENGTH INDEX. A proportion useful for studying the growth of boys and girls is the width-length index; this index is obtained by dividing height by hip width. This index is considered one of the most reliable measures for estimating the general build of the body. The index decreases in both boys and girls from birth to around seven years. At ages five to eight years, the average indexes are about the same for both sexes; after this age, the mean indexes for the boys continue to decrease while the mean for the girls increases steadily to maturity.

ADIPOSE TISSUE. Girls have somewhat more adipose tissue at all ages than do boys. From one to six years of age, they lose fat more slowly than do boys, and they gain it more rapidly after age six; at adolescence, some acceleration in fat gain starts shortly before and continues until after the general adolescent spurt. About a year after the adolescent height spurt starts in girls, the amount of fat increases for about two years; then an actual loss of fat occurs throughout the duration of the general spurt, but the fat returns in a second wave when this spurt ends.¹

Girth Measures

Growth studies generally have not included girth measures of many parts of the body. Some studies of tissue composition have been made utilizing the calf of the leg as the site, because of the ease with which bone, muscle, and fat can be distinguished in X rays. These studies

¹ James M. Tanner, *Growth and Adolescence* (Springfield, Ill.: Charles C. Thomas, 1955), p. 17.

years; for the average girl, this gain is also consistent until around 11 years. The differences in average height for boys and girls for each year until the start of the girls' adolescent period is quite small. At 11 years of age, however, boys generally lose this advantage as the girls surge ahead. Later, the boys' adolescent spurt forces them ahead once more as their adult height superiority in this respect is established. The gain for girls during adolescence averages approximately three inches. In individual boys and girls, the rapid spurt in height is most pronounced during the earliest part of his or her adolescent acceleration. Further, variations occur in the annual height increments among children of the same age.

Weight

As for weight, only slight differences in mean weight exist between boys and girls at different ages from birth to the start of girls' adolescent spurt. During the first two years of life, gains in weight are tremendous; birth weight triples by the end of the first year and quadruples by the end of the second year. Increments in weight average about five pounds each year after this period until adolescence is reached. Thus, by the time children enter school, their weight increases have attained a steady rate. Thereafter, until the adolescent spurt, the average weights of boys and girls are practically the same at each age.

Generally, the average weight of girls exceeds the boys' average from 11 to 13 years. At 14 years, the averages of the two sexes are again about the same. After this age, however, boys' weights forge ahead. In girls, the most rapid weight growth occurs during the year before menarche. The average weight gain for boys during adolescence is approximately 40 pounds, the comparable average is considerably less for girls.

Head

A physical measure of significance for physical education is the size of the head; it is related to the intracranial volume and permits an estimation of brain growth. Size and rate of growth alone do not permit an adequate judgment of the potentialities of head and brain injuries from sports; the degree of union of the bones of the head is also involved.

The size of the child's head at birth is nearly two-thirds the adult size. By the time he enters school at the age of six years, it is about 80 per cent of adult magnitude. However, there is a consistent gain in size during the elementary school years, with some final acceleration at puberty. Head measurements have a relatively narrow normal range at each age.

Skeletal Shape

From at least five years of age until girls' adolescent spurt, sex differences in nearly all skeletal measurements are small. In the adult

In skeletal development, girls are generally more advanced than boys at all ages. At birth, they are ahead by a few weeks. As age increases, they gain on the boys consistently until adolescence, at which time they are two years advanced.

Circulatory System

HEART SIZE. Heart size during growth is roughly proportional to body size. However, prior to the adolescent spurt, the body growth rate is slightly greater than heart growth, so this proportion changes somewhat. As for skeletal muscle, the heart muscle participates in the adolescent spurt but starts about one year before the height spurt, so it is well established before puberty. The heart spurt occurs in both sexes but is more marked in boys.

HEART RATE. The heart rate falls gradually from birth to maturity. The average rate for boys and girls is about the same until 11 years of age; thereafter, the boys' rate decreases more rapidly. In adults, the rate is approximately 10 per cent greater in women than in men; this sex difference is established during adolescence. The heart trained by exercise is larger, stronger, slower, and steadier and is capable of greater sustained effort than the untrained heart. However, age differences in heart size cannot be eliminated by training.⁷

BLOOD PRESSURE. The diastolic blood pressure shows little change with age and no sex differences. The systolic pressure, on the other hand, rises steadily throughout childhood without significant sex differences until adolescence. At this time, the rise becomes more rapid and adult levels are quickly reached. The adolescent rise for girls starts earlier than for boys, as would be expected; however, the rise is not so great.

BLOOD. During childhood, the average number of red blood corpuscles is approximately the same for boys and girls. At adolescence, the number rises in boys but does not increase in girls; thus, the adult sex difference is established at this time, a situation which persists even in well-trained women athletes. As a consequence of the increase in the number of blood cells in boys, the amount of haemoglobin in the blood increases, with little or no change in mean corpuscle volume, mean corpuscle haemoglobin, or mean haemoglobin concentration.⁸

Respiratory System

The breathing rate under resting conditions decreases steadily throughout childhood and during puberty; there is no appreciable sex

⁷ Anna Espenschade, "Organic and Neuromuscular Development," *Children in Focus*, ed. Delia P. Hussey (Washington, D.C.: American Association for Health, Physical Education, and Recreation, 1954), p. 56.

⁸ Tanner, *op. cit.*, p. 102.

reveal that boys have only slightly more bone and muscle than do girls until puberty.

In the Medford Boys' Growth Study,⁴ utilizing cross-sectional data, the mean growth curve for calf girth consisted of a relatively slight increase from 9 to 10 years, a pronounced nearly straight-line rise to 12 years, a slight acceleration at 13 years, and a deceleration at 15 years. The increase in calf girth over this span of years was 25 per cent. In the Medford Study, too, a number of other girth measures have been given, including the upper arm, abdomen, buttocks and thigh. The percentage increases in the latter between 9 and 15 years are roughly comparable to those in calf girth.

Skeletal Musculature

In early growth, muscle fibers increase in size. Until early maturity, skeletal muscle constitutes the largest part of body growth. At birth, these muscles form from about one-fifth to one-fourth of body weight; in early adolescence, one-third; and in early maturity, two-fifths.⁵ The gain in musculature in childhood and adolescence is approximately equal to the growth of all other organs and tissues combined.⁶ In early childhood, boys have slightly more muscle and have a slightly higher growth rate than do girls, but the sex differences remain small until the adolescent spurt. At adolescence, a large skeletal muscle increase occurs in boys, coinciding roughly with increases in height and weight; the gains for girls at this time are not nearly so great.

PHYSIOLOGICAL GROWTH

Skeletal System

At birth, the bones of the skeletal system are not completely calcified, or ossified. Some of these are entirely cartilaginous in nature and do not show on an X-ray film, other bones are incompletely formed and do not have their ultimate articulation surfaces. Consequently, as bones develop, they change in chemical composition. The infant's bones contain more water and less mineral than do the bones of adults. As bones enlarge, their cartilage characteristics disappear and they become denser, harder, and brittler. During this process of ossification, the gain in the mineral content of bones is approximately 60 per cent.

⁴ H. Harrison Clarke and J. Stuart Wickens, "Maturity, Structural, Strength and Motor Ability Growth Curves of Boys 9 to 15 Years of Age," *Research Quarterly*, 33, No. 1 (March 1962), 26.

⁵ Ernest W. Watson and George H. Lowrey, *Growth and Development of Children* (3rd ed.; Chicago, Ill.: Year Book Publishers, Inc., 1958), p. 142.

⁶ White House Conference on Child Health and Protection, *Growth and Development of the Child: Part II, Anatomy and Physiology* (New York: Appleton-Century-Crofts, Inc., 1933).

also increase in strength and to a proportionately greater degree. Jones¹² found a marked adolescent spurt in boys between the ages of 13 and 16 years. For girls, a less definite spurt occurred around 12 to 13 years, followed by an actual mean decrease in strength scores thereafter; this change in the usual growth pattern was attributed to a lack of motivation to perform well on strength tests on the part of girls after puberty. There is no time when strength ceases to increase in boys from childhood until maturity is reached; this fact explodes the myth that the changes accompanying adolescence are temporarily enfeebling.

Utilizing numerous strength tests of various muscle groups throughout the body, Clarke and Wickens¹³ studied the mean growth patterns of boys 9 to 15 years of age based on cross-sectional samples. While variations occurred, the general trend was a slow but consistent increase in strength from 9 to 12 years; thereafter, the growth curves showed a pronounced generally straight-line rise. The increase in strength from 9 to 15 years ranged from 82 per cent to 175 per cent, depending on the muscle group tested.

In the Clarke and Wickens study, the mean growth curves for chin-ning and bar dips were similar. The mean number of chins varied from two to three times between the ages of 9 and 12 years; for the same ages, the number of bar dips varied between four and five. Pronounced increases for both tests occurred at 13 and 14 years; this rise continued for bar dips but not for chins at 15 years. For the ages involved, the increases were 128 per cent for chins and 176 per cent for bar dips.

Motor Ability

The mean growth curves for boys 9 to 15 years of age for the two motor ability items of standing broad jump (explosive muscular power) and 60-yard shuttle run (speed and agility) were investigated by Clarke and Wickens.¹⁴ The curve for the standing broad jump was nearly a straight-line rise throughout. For the shuttle run, the curve was erratic, starting with a plateau from 9 to 10 years; this was followed by a steep straight-line rise to 12 years; at 13 years, a dip appeared, followed by a rise to 14 years and a near plateau to 15 years. The increases in mean performances for these years were 53 per cent for the standing broad jump and 12 per cent for the shuttle run.

Espenschade¹⁵ has reported that boys can run faster, jump higher, and throw farther than girls at all ages from 6 to 12 years. In fact, she

¹² Harold E. Jones, *Motor Performance and Growth* (Berkeley, Calif.: University of California Press, 1949), pp. 34-41.

¹³ Clarke and Wickens, *op. cit.*

¹⁴ *Ibid.*

¹⁵ Espenschade, *op. cit.*, pp. 62-63.

difference during this time. At puberty, vital, or lung, capacity increases rapidly in boys, but there is little change in girls. The increases in boys are actually greater than would be expected from the amount of boys' acceleration in body size during this period.⁹

In both sexes, the oxygen and carbon dioxide percentages in expired air increase at adolescence; but in boys this occurs to a greater extent than in girls. Other important changes take place in the respiratory process which are too technical to detail here. The end result, however, is that the blood of boys can carry greater quantities of oxygen from the lungs to the muscles and can absorb greater quantities of waste materials in the muscles for expulsion through respiration than can the blood of girls. As a consequence, the muscular endurance performances of boys are more greatly improved.

Metabolism

Metabolic rate, which is related to the energy output of the body, consists of the amount of heat produced per square meter of body surface, it is basal when the body is in as nearly a complete resting state as possible. The basal metabolic rate falls constantly from birth onward, not only to maturity but actually extending into old age. There are slight checks in this downward trend between 11 and 12 years for boys and between 12 and 13 years for girls. For all ages, the boys' metabolic rate is always above the girls' rate relative to surface area. Tanner¹⁰ attributes this sex difference in part to the greater mesomorphy of boys and greater endomorphy of girls, pointing out that muscle has a greater resting oxygen consumption than does fat.

NEUROMUSCULAR GROWTH

Strength

The data pertaining to changes in muscle strength until recently were meager, being largely confined to strength tests of right and left grips and of arm and shoulder push and pull on a manometer. Strength is related to body size, as would be expected. This relationship is greater for boys than for girls, as the body size of boys generally involves more muscle mass while girls generally have more fatty tissue, especially from adolescence on. Consequently, there is also a sex difference in strength. Espenschade¹¹ has reported that boys are definitely stronger than girls in grip strength from ages 6 to 12 years.

At adolescence, the muscles not only increase rapidly in size; they

⁹ *Ibid.*, p. 105.

¹⁰ *Ibid.*, p. 106.

¹¹ Espenschade, *op. cit.*, p. 63.

implies progressive maturity, not just increasing dimensions. Simmons and Greulich¹⁹ endorsed this concept in principle when they concluded that the process of maturation and that of growth were quite different, and that changes in skeletal development differed from changes in body size. Thus, an understanding of maturation and its significance should have considerable value for the classroom teacher.

Skeletal age is the most commonly used scientific indicator of physiological maturity. It is a measure of how far the bones are in their course of development, as recorded by an X ray—usually of the wrist and hand. At birth, many of these "bones" are cartilage and do not show in an X ray; others are only partially ossified and appear incomplete in the X ray. The process of ossification goes on until maturity is reached. Standards have been prepared by Greulich and Pyle²⁰ for all chronological ages up to and including 19 years. When a 12-year-old boy's X-ray hand conforms to the standard for 12-year-old boys, his skeletal age is then 12 years; thus, his maturation is typical for his age. This maturing of the skeleton parallels generally the physiological maturation of the individual.

From the Medford Boys' Growth Project, Clarke and Wickens²¹ obtained a standard deviation for skeletal age of approximately 12 months at each age from 9 to 14 years inclusive. Thus, at 9 years, for example, approximately two-thirds of the boys had skeletal ages between 8 and 10 years—a span of two years; yet the same boys were tested within two months of their birthdays, so they could not vary chronologically by more than four months. Actually, the skeletal age ranges varied generally between four and five years. Thus, individual differences in maturation are pronounced.

The significance of these maturational differences as related to physical and motor traits of boys 9, 12, and 15 years of age was studied by Clarke and Harrison,²² again with data from the Medford Boys' Growth Project. Based on skeletal age, three maturity groups were formed at each of the three ages; these were designated as advanced, normal, and retarded. Without exception, the difference between body weight means were significant for maturity-group comparisons at each age, with the more mature group having the highest average. Other variables for which the differences between test averages were especially significant were grip strength, hip width, sitting height, upper arm girth, and calf girth;

¹⁹ Katherine Simmons and W. W. Greulich, "Menarcheal Age and the Height, Weight, and Skeletal Age of Girls," *Journal of Pediatrics*, 22 (1943), 518-548.

²⁰ W. W. Greulich and S. I. Pyle, *Radiographic Atlas of Skeletal Development of the Hand and Wrist* (Stanford, Calif.: Stanford University Press, 1950).

²¹ Clarke and Wickens, *op. cit.*

²² H. Harrison Clarke and James C. E. Harrison, "Differences in Physical and Motor Traits between Boys of Advanced, Normal, and Retarded Maturity," *Research Quarterly*, 33, No. 1 (March 1962), 13.

found that the sex difference was so great at puberty that the best girl's throw was shorter than the distance thrown by the average boy.

Between the ages of 4 and 5 years, the neuromuscular structure of boys and girls is too incomplete to function adequately. Children of these ages are still somewhat clumsy. However, their eye-hand coordination is beginning to develop, and they are able to catch and maneuver large objects. Between 6 and 8 years, the coordination of children improves, and throwing and catching are more accurate; total body movements are under better control. From 9 to 12 years, many skills become automatic, and children show an interest in the development of skills as such. Basing coordination on the ability to perform stunts (Brace test), Espenschade¹⁶ demonstrated that no appreciable difference existed between boys and girls until puberty was reached.

INDIVIDUAL DIFFERENCES

The presentation of the growth changes of boys and girls thus far has been based on average levels for different chronological ages. To the unwary, these results seem very neat and conclusive; they appear to be a common yardstick which may be universally applied. In fact, to treat children of the same age alike is the usual practice as children enter the first grade and progress together through school. Actually, however, the growth characteristics described are merely typical ones for any age and do not indicate the status of all children at any age. Individual differences are so great that chronological age does not guarantee uniformity; realistically, the bald assertion that a boy or girl is a given age is hopelessly vague in most contexts.

The classroom teacher knows that pupils in her grade vary in many ways, as she has observed them in all shapes, sizes, abilities, and interests. But just how different they are and what basic significance these differences have should be explored. This exploration, brief as it is, will be related to those differences of greatest significance for participation in physical education activities.

Maturation

Greulich¹⁷ has observed that the chronological age of a child is often little more than an indication of the length of time he or she has lived; it does not necessarily bear a close relationship to the amount of progress the child has made toward attaining maturity. Todd¹⁸ has emphasized that the phenomenon of maturation, quite different from that of growth,

¹⁶ *Ibid.*, p. 63.

¹⁷ W. W. Greulich, "Skeletal Status and Physical Growth," *Dynamics of the Growth Process* (Princeton, N.J.: Princeton University Press, 1950).

¹⁸ T. W. Todd, *Atlas of Skeletal Maturation* (St. Louis, Mo.: C. V. Mosby Co., 1937).

strength and muscular endurance measures. The ectomorphs and mid-types were the smallest of the groups; they were superior to the endomorphs and endo-mesomorphs in relative strength. The endomorphs and endo-mesomorphs were the largest and generally the weakest. An unfortunate finding was that none of the endomorphs could chin once. Finally, a greater percentage of endo-mesomorphs were advanced than were retarded in maturity; the reverse was true for the mid-type boys. Thus, another basic trait is shown to affect physical size and performance.

In Hindmarch's study,²⁷ those eight-year-old boys with endo-mesomorphic physiques were significantly more mature and had greater strength than did mid-types. In the standing broad jump, mesomorphs were superior to all other physique groups.

Body Size

The differences in body size of boys and girls of any age in any school grade are common observations of all classroom teachers. However, here are a few figures from the Medford Boys' Growth Project, which will serve to stress this point. At 12 years of age, weight varied by as much as 76 pounds; at 9 years, this differential was 52 pounds. The difference between the tallest and shortest 12-year-old boy was nearly one foot; at 9 years, this difference was over eight inches. The significance of body-size measures for physical performances can be seen from the following correlations reported by Clarke: .86 between lung capacity and average of 12 strength tests; .82 between body weight and McCloy's Athletic Strength Index.²⁸

Muscular Strength

Traits of great significance for physical education are the strength and endurance of the muscles. All movement depends on the strength of muscles, and the continuance of movement depends on their endurance. In an area, such as physical education, which depends on movement, extending on occasion to the limits of human capabilities, these traits have special significance. It is true, of course, that physical performances are dependent on other factors, but, despite this fact, participation in physical activities is impossible without strength, and it is limited, or futile, when muscles are weak or lack endurance.

Muscular strength is measured with instruments, such as grip strength with a manometer, leg lift with a dynamometer, and elbow flexion strength with a tensiometer. Muscular endurance is evaluated by repeti-

²⁷ Hindmarch, *op. cit.*

²⁸ H. Harrison Clarke, "Relation of Physical Structure to Motor Performances of Males," *Professional Contributions No. 6, American Academy of Physical Education* (Washington, D.C.: American Association for Health, Physical Education, and Recreation, 1953), p. 63.

these were followed by the sum of 12 cable-tension strength tests, leg strength, biceps strength, and chest girth. Thus, the great influence of the maturity variations of boys of the same age is clearly demonstrated in these body size and strength differences.

With eight-year-old boys as subjects, Hindmarch²³ formed high- and low-maturity groups, based on skeletal age assessments. The advanced-maturity boys had significantly higher means than the retarded-maturity boys on measures of body size and muscular strength.

Physique

In addition to one's level of maturation during growth, his physique type is primarily a matter of heredity. Thus, we have roly-poly types, rugged-stocky types, gangling-linear types, and the like. The type of physique, aside from size, which one possesses will affect his physical performances in no small way.

Following a long line of physique-typers, dating back to Hippocrates, Sheldon and associates²⁴ created the somatotype, the most acceptable method today for describing physiques. The Sheldon somatotype has three components: endomorphy, mesomorphy, and ectomorphy, each of which is rated on a seven-point scale.²⁵ High ratings in the first component, endomorphy, are assigned to physiques which tend toward round shape and soft texture (Santa Claus). High ratings in the second component, mesomorphy, are given to physiques with prominent musculatures, thick bones, and solid texture (Hercules). High ratings in the third component, ectomorphy, are assigned to physiques that are narrow and linear (Ichabod Crane). There are a large number of combinations of these three components among boys and girls.

Again in the Medford Boys' Growth Project, Clarke, Irving, and Heath²⁶ studied the relation of maturity, structure, and strength measures to the somatotypes of boys 9 through 15 years of age. The individual differences were pronounced, as shown by the following distribution of 259 boys based on their classification of somatotypes: endomorphs, 7 per cent; mesomorphs, 21 per cent; ectomorphs, 24 per cent; endo-mesomorphs, 10 per cent; and mid-types, 38 per cent.

In studying the significance of these physique differences, the mesomorphs showed general superiority in both gross and relative muscular

²³ Robert G. Hindmarch, "Significance of Physique, Maturation, Body Size, Strength, Motor Ability, and Reaction Time Characteristics of Eight Year Old Boys" (Microcarded doctoral dissertation, University of Oregon, 1962).

²⁴ William H. Sheldon, S. S. Stevens, and W. B. Tucker, *The Varieties of Human Physique* (New York: Harper & Row, Publishers, 1940).

²⁵ William H. Sheldon, Wesley Dupertuis, and Eugene McDermott, *Atlas of Men* (New York: Harper & Row, Publishers, 1954, p. 29).

²⁶ H. Harrison Clarke, Robert N. Irving, and Barbara H. Heath, "Relation of Maturity, Structural, and Strength Measures of Boys 9 through 15 Years of Age," *Research Quarterly*, 32, No. 4 (December 1961), 449.

with those who are nonparticipants for some of the traits presented above.³¹

At the close of each sport's season, the coaches of the respective teams rate their squad members as outstanding athletes, regular players, and substitutes. Such results as the following were obtained: The outstanding athletes at both school levels had significantly higher mean skeletal ages than did the other groups; in studying maturity relative to chronological age, the outstanding elementary athletes only were found to be advanced. In general, the size of athletes as compared with nonparticipants was more significant in the junior high school than at the elementary school level, this was particularly true for the outstanding athletes. A higher proportion of mesomorphs was also found among the junior high school athletes. Strength was a consistent differentiator of athletic ability at both school levels; this was particularly true for the gross measures, such as the Strength Index. However, the relative strength of the outstanding athletes and regular players was also pronounced; the average Physical Fitness Indices were 131 and 123 for the outstanding junior high and upper elementary school athletes, respectively. In the standing broad jump, an explosive muscular power test, the averages of the outstanding athletes and regular players were also significantly higher than those of the nonparticipants at both school levels.

In a second analysis,³² the profiles of 38 outstanding athletes in upper elementary and junior high schools were studied; in so doing, each athlete was compared with norms for his chronological age on 24 measures of maturity, body size, strength, motor ability, and intelligence. Among the findings were: In all instances, the mean of the outstanding athletes was above the average for all boys at their respective ages. The most distinctive characteristics of the athletes in all sports were their high averages on tests of explosive power, speed and agility, gross strength, and arm strength; of less importance, but still with high averages, were skeletal age, height, and relative strength. The standing broad jump, 60-yard shuttle run, Strength Index, and arm strength (based on pull-ups and push-ups) were most frequently observed as compensating traits for apparent deficiencies in other important characteristics when found among the outstanding athletes. The somatotypes among the 38 athletes were 13 mesomorphs, 12 mid-types, 10 ectomorphs, 3 endo-mesomorphs, and no endomorphs. Differences existed for the athletes in different

³¹ H. Harrison Clarke and Kay H. Petersen, "Contrast of Maturational, Structural, and Strength Characteristics of Athletes and Non-athletes 10 to 15 Years of Age," *Research Quarterly*, 32, No. 2 (May 1961), 163.

³² H. Harrison Clarke and Morgan E. Shelley, "Maturity, Structure, Strength, Motor Ability, and Intelligence Test Profiles of Outstanding Elementary School and Junior High School Athletes," *Physical Educator*, 18, No. 4 (December 1961), 132.

tively lifting a submaximal load, examples are chinning and sit-ups. Certain strength test batteries have been used extensively in research, especially Rogers' Strength Index.²⁹ The Strength Index is the gross score from seven tests: right and left grips, back and leg lifts, lung capacity, and arm strength (obtained from pull-ups and push-ups). A Physical Fitness Index is obtained as a measure of relative strength by relating the achieved Strength Index to a norm based on sex, age, and weight. For the Physical Fitness Index, according to the norms, the fiftieth percentile is 100, the first and third quartiles are 85 and 115, respectively.

The individual strength differences of elementary school boys and girls are pronounced, as will be seen from the following examples taken from the Medford Boys' Growth Project. The illustrations are for boys 12 years of age; however, relatively comparable results prevailed at all other ages. For these boys, then, the average Strength Index was 1215; the standard deviation, 230, and the range, 1031 (in pounds, over a half-ton). The average total strength on 12 cable-tension tests was 780 pounds, the standard deviation, 121 pounds; and the range, 729 pounds (nearly equal to the average). For a muscular endurance test, the average number of chins was 3.2, the standard deviation, 3.3; and the range, 14. While not applied here to the 12-year-old boys, the Physical Fitness Index of both boys and girls at any age ranges from 40 and less to 160 and more, thus, typically, a difference of 400 per cent is found between the weakest and strongest in strength relative to their sex, age, and weight.

Hindmarch³⁰ found that muscularly strong eight-year-old boys were significantly more mature and had better motor ability scores than boys of this age who were muscularly weak. When relative strength was used as the measure (that is, strength relative to age and weight), the boys with high scores exceeded the boys with low scores on motor ability tests.

Athletic Ability

Perhaps, for boys at least, the culmination of the effects of individual differences on physical education performances may best be seen in their ability to make and be successful on interscholastic athletic teams. In the Medford, Oregon, public schools, inter-school competition in various sports is conducted in the upper elementary school grades (fifth and sixth) and in junior high school. Consequently, it has been possible to contrast the characteristics of boys who participate on these teams

²⁹ H. Harrison Clarke, *Application of Measurement to Health and Physical Education* (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959), chap. 8.

³⁰ Hindmarch, *op. cit.*

pupils are definitely older than others and have the many advantages associated with increased maturity, greater size and strength, and more experiences; the younger ones in the grade, on the other hand, are generally handicapped in these respects, and must constantly struggle to "keep up" with their peers. As a consequence, leadership in many facets of the school experience, especially those associated with sports and athletics, logically gravitates to these older boys and girls.

The first-grade child is prone to be a very active one. His preschool days have been replete with relatively uninhibited movement and play. He is now confined to the classroom and his physical activities are restricted, at least for large parts of the day. Thus, he is apt to be restless, to crave vigorous activity, and to be somewhat unpredictable in his actions. He still maintains much of his imaginative approach to play. He has an interest in trying out his abilities; as a result, self-testing activities have a definite appeal for him. The interest span is generally short; therefore, programs should be varied. Boys and girls have similar interests and capabilities; thus, they can well participate together in the same program. These pupils have a strong interest in personal performances, with little desire to participate in group efforts, including team games and sports.

Continuing School

The second-grade child is now making a good adjustment to school—an adjustment which continues into the third grade and beyond. These children are not always self-contained; they are introspective and desire the approbation of their group and parents. They are starting to acquire an ethical sense and to feel the importance of personal and group activities. They demonstrate a mixture of timidity and defiance; periods of brooding, shyness, and pensiveness occur. Decisions are difficult to make. The length of the attention span is increasing.

Generally, third-grade children dislike being alone; they want companions to take an interest in their activities. Some resentment for parental authority is found; their best behavior may be away from home or when strangers are visiting. This age group is sensitive to criticism, and they typically indulge in a good deal of excusing and alibiing. However, they are beginning to set high personal standards. At this age, some segregation of the sexes in the choice of playmates and groups becomes important for the first time.

At the fourth grade, interest in being members of a team or group is noticeable, a trait which becomes increasingly pronounced, especially for boys, as children continue through school. They show greater allegiance to peer groups and begin to run in loosely formed gangs. A desire to perfect skills is manifest; this desire is aided materially by their natural development as they become larger, stronger, and better

sports, with those in football being definitely superior on most tests; the basketball and track athletes were tall for their weights; the baseball athletes had high explosive power; and the wrestlers had great strength relative to their age and weight.

BEHAVIOR CHANGES

The literature on the behavior changes taking place during growth is voluminous. Consequently, no comprehensive attempt to review this literature will be made here. Instead, certain general conclusions pertaining to children's changing behavior patterns will be mentioned, especially those which relate to their potentialities for participation in physical education.

Behavior is most complex, as the child's actions are bound together with many extraneous but still intimately related factors, such as his heredity, his mentality, his home and neighborhood environment, his opportunities for expression and their nature, his physiological maturity, his physical and motor development, and the culture of the society of which he is a part. It is impossible to separate out these factors in order to isolate behavior as an entity in and by itself. The phenomenon of individual differences again plays an important role in the proper understanding of the behavior of boys and girls. It is a fundamental and damaging mistake to accept a blueprint which specifies that all children of a given age are thus and so. Such blueprints, when they exist, should merely be used as points of reference and as indicators of general trends.

Starting School

Upon entering school, most boys and girls come from protected homes. Their contacts with other children have been limited mostly to a small number in their particular home environs. They have been largely dependent upon parental control and have not ventured appreciably on their own. They love their homes and the persons and objects associated with them. They usually get along well with adults, although shy when first meeting them. Preschool children are serious about themselves and are concerned with their own abilities. Play is apt to follow domestic patterns in both sexes; they like to "play house," and dolls are a favorite plaything. Thus, starting to school is a big event in their lives as they leave this protected existence.

Certain inequalities among children are manifest upon entrance to the first grade and, by and large, accompany them through school. Many of these have been discussed earlier in this chapter as individual differences. Another obvious one is that the ages of children in this grade, as well as the others to follow, vary by as much as a year, as a consequence of the nature of most schools' admission policies. Thus, some

not exist between the sexes. These similarities are continued for each age until the girls reach puberty.

However, a number of differences between the *average* growth patterns of boys and girls do exist, and they have significance for physical education performances. These differences are as follows: (1) From the age of two years, boys' arm length is greater than the arm length of girls. (2) After eight years of age, the width-length proportion of boys decreases, while this proportion increases in girls; thus, the hips of girls are broader for their height, as compared with boys. (3) For all ages, boys' metabolic (energy output) rate is always above girls' rate relative to surface area. (4) Boys have greater muscular strength and endurance than do girls at all ages. (5) Boys can run faster, jump higher, and throw farther than can girls at these ages. (6) The physique types of boys tend more toward mesomorphy, while the girls tend more toward endomorphy.

Despite the similarities of boys and girls from the age of six years to puberty, the sex differences are sufficiently important to warrant the following principle for elementary school physical education: *While boys and girls in the early grades will profitably participate together in some physical activities, such as rhythmic, mimetic, conditioning exercises, and the milder play forms, they should be separated for the more vigorous activities involving endurance performances, muscular power events, and all-out sports activities.*

General Approach at Puberty

The problems pertaining to elementary school physical education become especially acute with the advent of puberty. At least three major factors contribute to the extensiveness of these problems. These are:

1. In general, girls start puberty about two years before boys. The adolescent spurt at this time forces girls ahead of boys on many of the traits discussed in this chapter; this occurs, typically, in the late elementary school grades.

2. There is a great range of ages—three to four years—when both boys and girls enter puberty. Thus, the effect of the adolescent spurt serves to increase the individual differences of boys and girls of the same age.

3. The growth changes are very rapid during adolescence, as contrasted with the slow, steady growth before this period. This growth acceleration adds to the extent of differences at this time.

As shown earlier in this chapter, most bodily systems are affected drastically during adolescence. Most adult differences between men and women are established at this time. The girls' adolescent spurt is two years earlier than that for boys. During these two years, the boys continue to grow at their usual steady rate. This additional growth, combined

coordinated. The imagination is still vivid for this age group, a trait which is commonly expressed in hero worship. The fourth-grader is typically self-sufficient and self-critical, but not severely so, and he is anxious to please others. At this age, too, the drawing apart of the sexes continues, although they have still not lost interest in each other, as is evidenced by their slapping, chasing, pushing, and teasing each other.

Approach to Adolescence

The fifth grade represents the start of the adolescent spurt for early-maturing girls; boys have not yet reached this period. As a consequence, one of the fundamental occurrences for this grade is the beginning of differences in attitude toward sex. Girls in this grade are definitely more mature and poised than boys. Boys continue to develop strong loyalties to the group or gang to which they belong. There is a strong tendency at this age to be self-centered and inconsiderate.

By the sixth grade, most girls have started adolescence; some early-maturing boys have also entered this period. Girls of this grade are usually more sedate and take pride in their personal appearance; boys are inclined toward rowdyism, and they yell, fight, wrestle, and tease. Membership in clubs and groups is increasingly important for both sexes. Team games are popular, especially with boys; those children who are lacking in skill, however, are inclined to withdraw—a tendency which may lead to social maladjustments of various kinds.

APPLICATIONS TO PHYSICAL EDUCATION

In this chapter, the mean growth curves of boys and girls as related to physical, physiological, and neuromuscular measures were described; the differences in these curves for the two sexes were discussed. The extent of individual differences was considered as related to their maturation, body size, muscular strength and endurance, and athletic ability. Finally, the behavior changes during this period were presented. The purpose of the final section of the chapter is to draw from this welter of information those applications to health and physical education which seem justified and which may be of use to the classroom teacher in planning and conducting her elementary grade program in this field.

General Approach Prior to Puberty

According to the above presentation of the *average* growth patterns of boys and girls, a fairly steady state in physical, physiological, and neuromuscular measures has been reached by the time children enter the first grade. For many of these measures, including height, weight, shoulder-hip and leg-trunk proportions, muscle mass, neuromuscular coordination, heart rate, systolic blood pressure, number of red blood corpuscles, lung capacity, and breathing rate, appreciable differences do

to aggressive or destructive conduct, now has the additional means to do so. In a similar way, the early-maturing girl, who menstruates earlier than others in her classroom or whose breasts develop while those of the others remain prepuberal, may show extreme embarrassment. Both early-maturing boys and girls are likely to achieve an advantageous position in school—to assume leadership in games and class activities. As a consequence of these observations, a principle to be applied to elementary school health and physical education is: *Beginning in the fifth grade, elementary school boys and girls should be given an understanding of puberty and puberal growth changes and should be helped to a realization of these effects on the members of their age group, to the end that they may make their own behavioral adjustments and assist others to do likewise.*

Individual Differences

Much stress has been placed throughout this chapter on the nature and extent of the individual differences of boys and girls in the elementary school. The significance of these differences for performances in physical education activities has been demonstrated. These differences permeate the organism; as indicated herein, they are especially related to maturation, physique types, body size, physiological systems, muscular strength and endurance, and athletic ability. A number of principles can be justified from this information.

1. *The classroom teacher should be alert to individual differences and should evaluate them insofar as she can.* True, no teacher can test for all the many factors considered in this chapter. However, for physical education, the effects of many of these factors are reflected in the body size, strength, and motor ability of children. Thus, boys and girls who are mature and have better physiques for physical activity also are larger, stronger, and more agile, and have greater explosive power than others of their age; tests related to these traits can be given, as described in Chapter 11.

2. *The motor performance expectations of boys and girls should be judged, in part at least, from a realization of their strengths and weaknesses, especially as they apply to maturity, physique, and structural characteristics.* For example, children with a high degree of endomorphy are definitely limited in physical activities; the mesomorph, on the other hand, is well adapted for motor performance of many kinds. Immature, small, and weak children are definitely handicapped when in competition with mature, large, and strong children. In general, mature, mesomorphic, and large boys have great muscular strength and power. However, compensations for deficiencies in certain of these traits may be made by strength in others; for example, the small child with high relative strength may perform well in many types of motor skills.

with a generally greater adolescent spurt than for girls, results in a much larger and more powerful man than woman.

Comparisons between the sexes in relation to growth changes occurring during adolescence may be briefly summarized, as follows:

PHYSICAL GROWTH. The boys have a much greater increase in weight, height, and arm length. For the shoulder-hip proportion, boys have a greater increase in shoulder breadth, while the girls have a greater hip-width gain. The superior height of the boys occurs largely in increased leg length, which does not occur to nearly the same degree in girls. The width-length (height/hip width) proportion decreases in boys but increases in girls. The girls have the greatest adipose tissue spurt.

PHYSIOLOGICAL GROWTH. The heart size and systolic blood pressure of boys have greater gains during adolescence; but the girls' heart rate rises to about 8 per cent above boys. The lung capacity has a pronounced rise in boys but only little change in girls. The number of red blood corpuscles increases more in boys; thus, more haemoglobin is available in the blood stream of boys. As a consequence, boys' blood can carry greater quantities of oxygen from the lungs to the muscles and can absorb greater quantities of carbon dioxide. Consequently, the muscular and circulatory endurances of boys greatly exceed those of girls.

NEUROMUSCULAR GROWTH. Although generally superior throughout growth, the adolescent spurt results in boys who are much stronger, have greater motor ability, and show better neuromuscular coordination of the big muscles of the body than girls.

As a consequence of the many changes taking place during adolescence, an obvious principle for elementary school physical education is related to the extensiveness of individual differences. However, the statement of this principle will be delayed until the next section, which deals further with these differences. A second obvious principle is the following: *Boys and girls should definitely be separated for physical education from at least the fifth grade on; occasional coeducational activity of a social nature, such as folk dancing, social dancing, and appropriate informal games, may be desirable.*

The differences in behavior between the physiologically advanced and the physiologically retarded of the same age may create a problem of considerable magnitude. Tanner³³ has indicated that both feel estranged from the general group of children. The isolation of the late developer continues longer and frequently seems to affect behavior. "This is perhaps particularly true in boys, who may substitute false aggressive rowdiness for the genuine manly drive they see developing in their contemporaries."³⁴ The early-maturing boy, on the other hand, if prone

³³ J. M. Tanner, *Education and Physical Growth* (London: University of London Press, Ltd., 1961), p. 122.

³⁴ *Ibid.*

vigorous and carried out long enough to make demands upon the cardiovascular system. These performances should be alternated with rest or mild activity. Initially, fundamental movements should be used, such as running, jumping, skipping, climbing, and the like. Later, games requiring vigorous activity may be used. Conditioning exercises are appropriate at all age levels.

2. *Motor skills should progress from gross to more refined movements as the child matures.* Most children, upon entering school, are still somewhat awkward and lacking in motor coordination. Therefore, the early skills presented should be gross in nature, using large balls, stationary targets, and simple equipment. Such activities may include bouncing balls, throwing and catching, throwing at a target, simple stunts, and elementary games. Later, the stunts can become more difficult, apparatus exercises may be included; and simple ball games may be added. Many games leading up to the regular sports played by high school boys and girls may be introduced.

3. *The development of sports skills should begin with simple fundamentals and progress gradually to the complicated performances of total sports.* As indicated in the second principle above, sports experiences should start with simple ball handling. Early games should have simple directions and few rules. Games of increased organization can follow with more complicated rules and requiring rapid change of pace. Finally, this progression may culminate with some experiences in such common sports as basketball, volleyball, soccer, speedball, and the like.

4. *Program adjustments should be made in accordance with the length of the attention span of children.* The attention span of young children is usually quite short. Consequently, for them, frequent changes of physical education activities are necessary; games should come to a quick climax and start again. In the later elementary school grades, activities can be continued for some time, if kept interesting and challenging.

5. *Appeals should be made to the basic motivational drives of children.* Young children are essentially self-centered, seek the approval of adults, and are highly imaginative. Thus, they respond well to sincere praise; they participate well in "it" games, where they are the center of attention; they enjoy activities which allow for dramatization, such as those with a strong story interest or in which they can imitate local events, customs, and the like; and self-testing stunts and events appeal to them. Later, they need to feel assurance of their position in a social group. Toward the end of the elementary school period, boys are addicted to hero worship; and frequently girls may have "crushes." At all times, children should be protected from ridicule when their physical education performances do not compare well with those of the class.

6. *Positive efforts should be made to provide all children with some success experiences.* Obviously, all children cannot and should not be suc-

3. *Certain basic traits desirable for good physical performance can be improved through physical education.* This is particularly true for muscular strength, muscular endurance, and circulatory endurance. When a child is subpar in these traits, frequently his musculature can be improved by use of the right kind and amount of exercise. At least, these conditions can be improved within the limits imposed by the child's physique type.

4. *Means should be found for the effective grouping of children for and/or within physical education classes in order to provide reasonable homogeneity of motor potentialities.* This is an especially important principle. The usual system of conducting the same physical education for all children in a classroom without regard for their individual differences in motor performances should be abandoned. This whole presentation demonstrates that this is wrong. How these groupings are to be accomplished is, of course, a problem. When more than one classroom exists for the same grade, children in the combined rooms could be separated for physical education, according to their abilities; the respective teachers could then devote their efforts to the different levels. Actually, a school-grade limitation is not necessary for this purpose, as physical education abilities cross age and grade lines; thus, the teachers of two adjacent grades could combine their efforts in this respect.

Behavioral Adjustments

As indicated earlier in this chapter, starting school is a big event in the lives of boys and girls. They not only bring with them a host of individual differences in respect to the body, but also bring with them many variations in behavioral patterns. The physical characteristics of the different ages interact with the behavioral characteristics to form a cohesive whole; the two are inseparable, each either restricting the other or contributing to the other.

While the behavioral patterns discussed have been related to specific grades in school, it was stressed that individual differences in this regard exist, that it is a fundamental and damaging mistake to accept a blueprint which specifies that all children of a given age conform to one standard, and that such blueprints should be used only as points of reference and as indicators of general trends. This point of view is reiterated for purposes of emphasis. Without reference to specific grades, therefore, the following principles for elementary school physical education are proposed.

1. *Muscular and organic development should keep pace with the full potentialities of physical, physiological, and neuromuscular growth.* Large-muscle activities which develop muscular strength, muscular endurance, and circulatory endurance are essential. Periodically, muscles should be taxed to the maximum; and activities should be sufficiently

2. Boys and girls should definitely be separated for physical education from at least the fifth grade on; occasional coeducational activity of a social nature, such as folk dancing, social dancing, and appropriate informal games, may be desirable.

3. Beginning in the fifth grade, elementary school boys and girls should be given an understanding of puberty and puberal growth changes and should be helped to a realization of their effects on the members of their age group, to the end that they may make their own behavioral adjustments and assist others to do likewise.

4. The classroom teacher should be alert to individual differences and should evaluate them insofar as she can.

5. The motor performance expectations of boys and girls should be judged, in part at least, from a realization of their strengths and weaknesses, especially as they apply to maturity, physique, and structural characteristics.

6. Certain basic traits desirable for good physical performance can be improved through physical education.

7. Means should be found for the effective grouping of children for and/or within physical education classes in order to provide reasonable homogeneity of motor potentialities.

8. Muscular and organic development should keep pace with the full potentialities of physical, physiological, and neuromuscular growth.

9. Motor skills should progress from gross to more refined movements as the child matures.

10. The development of sports skills should begin with very simple fundamentals and progress gradually to the complicated performances of total sports.

11. Program adjustments should be made in accordance with the length of the attention span of children.

12. Appeals should be made to the basic motivational drives of children.

13. Positive efforts should be made to provide all children with some success experiences.

14. The ethical values from participation in physical education should be stressed.

15. The values of both leadership and followership should be understood and opportunities to experience each should be provided.

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cessful all the time, but they should be placed in situations where they can enjoy a reasonable amount of success. To meet failure at every turn is most discouraging and does not motivate the child to participate fully and wholeheartedly in physical education. Arranging physical education classes homogeneously is one way to provide an opportunity for some success; using self-testing activities, in which a child's present performance is compared with his past record, is another.

7. *The ethical values from participation in physical education should be stressed.* Opportunities to practice the principles of fair play, sportsmanship, cooperation, loyalty, courage, and other personal and social modes of conduct should be provided and fostered. An understanding and acceptance of the rules governing sports and respect for the authorities (officials) placed over the conduct of contests should be inculcated in all children. Guidance in recognizing the rights of others is vital. This process should start in the earliest grades, where rules are simple, and continue to the complicated patterns of modern sports.

8. *The values of both leadership and followership should be understood and opportunities to experience each should be provided.* Physical education is replete with opportunities for leadership; however, to be able to follow is also important, and on occasion may be more important. Efforts should be made to find some responsibilities for each child to perform; the temptation constantly to use the same few pupils for such assignments, because they are especially competent and willing, should be resisted. At the same time, strive to make each pupil a willing, contributing member of the group.

SUMMARY

In this chapter, the typical physical, physiological, and neuromuscular growth characteristics of boys and girls in the elementary school grades were presented, and the differences between the sexes with respect to these traits were identified. The extent of individual differences was considered in relation to their maturation, physique type, body size, strength, endurance, and athletic ability; the significance of these differences for physical education performances was demonstrated. Behavioral changes were traced as the child progressed through school. Finally, applications to health and physical education were developed from these many facts, with 15 principles being established. A list of these principles follows.

1. While boys and girls in the early grades may profitably participate together in some physical activities, such as rhythmic, conditioning exercises, and the milder play forms, they should be separated for the more vigorous activities involving endurance performances, muscular power events, and all-out performances.

Part Two



Health Education

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Chapter

3

Health Services

THE EARLIEST HEALTH SERVICES in the schools of the United States were contagion-oriented. They consisted of an inspection and screening process in an effort to control communicable diseases rampant at the time. Today, the functions are greatly expanded to include many health services, as will be seen in this chapter. The health emphasis is on the child and his total personality and not merely on disease or defects. The main objective is to promote optimal health, which includes the physical, mental, emotional, and social well-being and integration of the elementary school pupil.

For many years, educators in this country have considered health as a primary objective of education. In 1918, health was listed first among the seven cardinal objectives of education. Since then, each national commission that has re-evaluated the purposes of education has given recognition and prominence to this objective.

A key person in the school health service program in the elementary school is the classroom teacher. Each teacher has numerous opportunities to promote the health of her pupils, as she sees them constantly under all sorts of conditions. The health experiences they have in the school aid dynamically in the development of proper attitudes and behavior conducive to a healthy, happy, and successful life now and in the future.

Of course, the school administrator and the various personnel in the health field are responsible for the development of policies for the health service and they carry out certain over-all functions. However, upon the classroom teacher rests the success or failure of the health program in the school; unless she is interested in and understands this program and realizes her responsibility for this work, it will be largely ineffectual.

The health service program should be concerned with appraising the over-all health status of children, with the prevention and correction of

1. To make a health appraisal that is sufficient to assess the pupil's health status.
2. To locate any physical defects or abnormalities that the pupil may have, so that appropriate steps may be taken to secure their correction or alleviation.
3. To provide proper medical advice in the health counseling of pupils and in modifying school practices when advisable.
4. To evaluate the general physical fitness status of each pupil, so that modifications in physical activity programs may be recommended when desirable for individual pupils.

Content /

While the health examination is usually given by the family physician, it may also be done by a physician connected with the school health service. In either event, the following types of health information are needed for school purposes:

1. History of birth and infancy, past illnesses, immunizations, health habits, and behavior.
2. Height and weight records.
3. Postural and foot deviations, walking gait, general condition of the musculo-skeletal system.
4. Heart, lungs, abdomen (hernia), and genitals.
5. Nervous and endocrine systems.
6. Nutritional status, condition of hair and skin.
7. Vision, hearing.
8. Urine tests when practical, other laboratory tests if indicated.
9. Dental examination.

In examining the child for school purposes, the family physician should use the health examination record form that is being used in the child's school district. The form recommended for use in Oregon public schools in Fig. 3.1 on pages 60 and 61 is an example of one such record card. The "Oregon Pupil Medical Record" was developed cooperatively by representatives from the State Board of Health, the public schools, the universities preparing health teachers, and the state medical and dental societies. This health examination is an integral part of the health appraisal, which includes other types of observations, such as those by the classroom teacher, and screening vision and hearing tests.

In conducting the health examination, adequate time should be allowed to provide counseling of the pupil as related to the findings. The child's health and medical care are basically the responsibility of the child's own family, while the public schools and public health departments provide needed preventive services. Consequently, the parents of elementary school pupils should be encouraged to be present during their child's health examination. If the health examination is given by the pupil's

health problems, and with the control of disease. A good health service should also provide an educational experience for children, leading them to the adoption of desirable health habits in later life. This service in the schools may also help the family physician and the various health agencies in the community to provide better total care for elementary school children.

In this process, the classroom teacher, herself, should have sound physical fitness and emotional health, which will enable her to carry out all aspects of her teaching efficiently and effectively. Actually, the health of the teacher sets an example for the pupils who are directly under her supervision. It is most difficult for the teacher to develop good health practices and attitudes among her pupils when she is not a good example.

THE HEALTH EXAMINATION

Health examinations should be conducted periodically for all children from the kindergarten through high school. Usually, these examinations are given by the family physician; the results should be made available to the school. In addition to the strictly medical aspects, the examination should include a review of the pupil's various daily activities, dietary habits, and hours of rest.

A difference of opinion exists concerning the frequency with which health examinations should be given to school children. The preferred practice is that the most important examination is at entrance to school, before entering kindergarten or the first grade. Instead of each year, other examinations are proposed for the following times: at the start of the fourth grade, at the beginning of the seventh grade, and before graduation from high school. These four spaced examinations, each to be thoroughly done, are considered adequate today. However, under this plan, provisions should be made for special examinations if the pupil is referred by the teachers or by the school or public health nurse.

In Oregon, the state education department¹ recommends health examinations in the schools as follows:

1. Pupils entering a school for the first time.
2. Pupils referred through teacher-nurse screening.
3. Pupils new to the school system.
4. Pupils entering the ninth grade, or pupils entering the seventh and tenth grades.

Purposes

The purposes of the health examination are variously stated by state departments of education and by local school authorities. However, in general, the following four purposes are appropriate:

¹ *Health Services for the School-Age Child in Oregon* (Salem, Oreg: State Education Department), p. 13.

She can contact the Director of Health and Physical Education of her school system or state, the health officer of the local public health department, or the State Department of Health for the names of those particular organizations that render special health services to the schools.

Records

The primary purpose of school health records is to make suitable health data available to the classroom teacher and to appropriate health service personnel in order to help them in understanding and meeting the individual health needs of the elementary school pupils. These records also furnish information about pupils for other professional groups, such as public health workers and medical and dental organizations. Further, they aid in the counseling of the pupils by teachers and school health workers. Such data should stimulate a desire for health experiences that will carry over into later life, especially to encourage children to seek needed health services after leaving school.

Usually, the school district has a special record form or card for recording the health examination and screening tests. As an example of such a record form, the one in use by the public schools of Oregon is seen in Fig. 3.2 on pages 64 and 65. These records forms should include:

1. Personal history of diseases and immunizations.
2. Examination data from the physician and dentist.
3. Teacher observations in the classroom.
4. Screening tests by the teacher and nurse.
5. Actions taken by the public health department.
6. Follow-up procedures by school health personnel.

The health records for each pupil should be kept up to date and should follow him from grade to grade. It is important to have a permanent filing place for these records. In the elementary schools, these are usually maintained in the pupils' classrooms, the nurse's office, or the principal's office. Teachers should be given ample time in their schedule to do a good job in keeping these records up to date and neat in appearance. A system, such as the following, can be used on the record card to indicate what follow-up measures should be taken:

- ✓ — Defect
- C — Corrected
- R — Referral
- NT — No treatment needed
- T — Under treatment

FUNCTIONS OF THE CLASSROOM TEACHER

The elementary school classroom teacher should perform the following health service functions:

TEACHER OBSERVATIONS. The classroom teacher should be familiar with

physician in his office, an immediate follow-up is possible by indicating the remedial measures needed. When it is given by a school physician, the parents should be notified of any health conditions needing attention, with the recommendation that they consult their family physician.

Summer Roundup

During the summer preceding entrance to school, the parents should arrange with their family physician for a health examination of their preschool child. In addition, the necessary immunizations required by the school district should be obtained from either the family physician or the public health department. The physician, of course, should obtain the necessary health examination report forms from the school. During this summer roundup period, the school health service should provide notices pertaining to the health examination to the newspapers, television and radio stations, and other public information media; these news releases should include the purposes of and the need for the examination. This can be a good public relations project for the schools and the community.

Follow-up

Some school health programs in the elementary schools have been criticized for a tendency to neglect advising parents of conditions that need correction immediately following the school health examination. The health examination is of no value unless it is used as a basis for the development of a correction program. These findings should be available to all teachers and school personnel who come in contact with the pupils. The parents, if not present at the time of the examination, should be notified as soon as possible of the conditions which need immediate attention. It is not the function of the school to correct the defects of the pupils, but it is its duty to recommend to the parents that attention be given to the child by his family physician.

Teacher-nurse conferences are in order and should be regularly scheduled. These conferences are most valuable if they are devoted largely to a review of the necessary information regarding specific cases of the children who seem to be in serious need of medical care. The fully informed classroom teacher can be most helpful, both by adjusting the classroom program to the student's needs and by influencing the child and his parents to obtain correction of remedial conditions, as recommended by the school or family physician. Some of these pupils may be referred to the special counseling services for further testing as provided for by the school, community, and state. Where the services of a public health or school nurse are not available, it may be necessary for the classroom teacher to make the referral. The classroom teacher should be acquainted with the available health resources in her community and state.

classroom teacher should be alert to these symptoms and should record them on the health record card.

SYMPTOMS OF HEARING HANDICAPS. Symptoms which may indicate hearing handicaps follow.

1. Discharge from the ears.
2. Earache complaints.
3. Failure to hear questions.
4. Picking at the ears.
5. Turning head to hear questions.
6. Talking in a monotone.
7. Inattention in the classroom.
8. Expression of anxiety on face.
9. Loud and boisterous conduct.

SIGNS OF EYE TROUBLE. Eye trouble may be associated with the symptoms given below.

1. Styes or crusted lids.
2. Inflamed eyes.
3. Crossed eyes.
4. Headache complaints.
5. Frowning, scowling, or squinting.
6. Twitching of the eyelids.
7. Tilting the head to one side.

OTHER SIGNS OF HEALTH PROBLEMS. Other health problems may be identified with the symptoms which follow.

1. Want of cleanliness of the skin and hair.
2. Pallor of the lips.
3. Signs of skin disease or rashes.
4. Difficulty in breathing through the nose.
5. Decayed teeth.
6. Diseased gums.
7. Chronic cough or wheezing.
8. Limping when walking.
9. Speech defects or stuttering.
10. Nail biting.
11. Restlessness and noticeable tics.

The classroom teacher in her day-by-day observations learns the normal physical appearance and health behavior of her pupils; thus, she is able readily to recognize significant changes when they occur. She becomes adept in making such observations and soon does so informally as a daily practice. In this process, the teacher's role is not to diagnose unfavorable health conditions noted, but to refer the pupil to the school nurse or physician for medical attention if she deems the case sufficiently urgent.

In those school systems where school health examinations are spaced

COOPERATION WITH THE PERSON IN CHARGE OF THE SCHOOL HEALTH SERVICE PROGRAM. The classroom teacher should cooperate with the administrator of the school's health program in the conduct of a well-rounded health program for her particular school. This program should include the control of communicable disease, the prevention of dental caries, the promotion of the health examinations at specified intervals as set up by the professional health committee, seeing to it that all defects and disorders as listed in the health examinations are reported to the parents, and the emergency-care and first-aid program.

ENVIRONMENTAL HEALTH AND HEALTHFUL SCHOOL LIVING. The classroom teacher should be concerned with conditions in her room and surroundings, especially those pertaining to heating, ventilation, lighting, and seating arrangements.

MENTAL HEALTH. The mental health of boys and girls in school depends in large part upon the classroom teacher, who has the opportunity of promoting the emotional tone and climate of the classroom for her pupils. She is the key person in any mental health program for school children.

HEALTH INSTRUCTION. Most of the health teaching by the classroom teacher is directed toward helping the children to develop and maintain desirable habits and attitudes toward healthful living.

FOLLOW-UP AND INTERPRETATION. The follow-up program in health services requires the proper interpretation of the health conditions of the pupils to the parents. Sometimes the parents are invited to the school in order that the referrals and the deviations from normal may be interpreted to them. A referral form should be used. If a nurse is employed—school or public—she should work with the classroom teacher in this phase of the health program.

OBSERVATION AND INSPECTION

The classroom teacher can be of great assistance in the conduct of an effective school health program by administering certain screening tests to her pupils, as described later. She can also make systematic health observations and inspections; these will be considered in this section.

During the first week of the school year, the teacher should check her pupils for disorders of vision, hearing, teeth, and other obvious physical deviations which can prevent the pupil from pursuing a normal school education. The classroom teacher plays an essential role in this preliminary health inspection, as she is closely associated with pupils during the many school hours each day and has an excellent opportunity to compare appearance and actions of each child with those of the rest of the group in the classroom.

Many of the symptoms of health difficulties are listed below. The

granular flakes. This condition may be due to eyestrain. Frequent styes also may indicate some eyestrain. Further, the teacher should notice crossed eyes, and should note children who have frequent headaches or who squint when looking at their books or the blackboard.

Screening Instruments

A number of visual screening tests are available for use by the classroom teacher. Some of these tests utilize rather expensive equipment, such as the ortho-rater, the telebinocular, and the Massachusetts vision test. On the other hand, other tests, such as the Snellen, require only a cardboard chart and good lighting. Thus, the Snellen eye chart is the simplest visual screening test for use by the teacher.

Thompson³ studied the selection of a vision screening test for the public schools of Lincoln, Nebraska. Questionnaires were sent to 150 school superintendents throughout the Midwest. In choosing an instrument for this purpose, the Snellen test was favored by the largest number. All 13 of the Lincoln school nurses also voted for this instrument. However, the Snellen test—and this applies to other tests of the same general type—has been criticized, as analyses of its limitations as an adequate visual screening test show that the eyes are not appraised at reading distance and that the test is not critical in detecting astigmatism.

Snellen Testing

The Snellen test of visual acuity is based on the ability of the child to read a special eye chart with lines of letters decreasing in size from top to bottom. A small numeral at the side of the chart indicates the number of feet away from the chart at which the normal eye should be able to read letters of that size. The standard distance for testing acuteness is 20 feet from the chart, because the light rays reflected from objects at that distance are nearly parallel when they reach the eye; consequently, a minimum amount of eye accommodation is needed to focus the objects on the retina.

Frequently, local or state health departments, local or county school systems, or state departments of education can supply Snellen eye charts. If not available at one of these sources, they may be obtained from the National Society for the Prevention of Blindness, 1790 Broadway, New York 19, New York.

The Snellen symbol E eye chart is most desirable for elementary school children; this chart is illustrated in Fig. 3.3. The classroom is a good place for using the Snellen test, provided that 20 feet of unrestricted space and good illumination are available. The chart should be hung at approximately the child's eye level when either sitting or standing, depending on the position for taking the test. The light should be from 8 to 12 foot-

³ John C. Thompson, "Selecting a Vision Screening Instrument for Lincoln, Nebraska, Public Schools," *Journal of School Health*, 28, No. 8 (October 1953), 250.

several years apart, as discussed above, the school usually provides for an annual health check of those children who have shown signs of health problems. The classroom teacher should discuss the status of these pupils with the nurse and, possibly, the school physician. If subsequently examined, especially if this is done by the school physician, the classroom teacher should be present, such attendance helps the teacher to do better and more efficient health counseling.

VISION SCREENING

The average school child does not complain readily about his eyes. However, various surveys have shown that between 20 and 30 per cent of school children have some type of visual defect. Cromwell² reported a visual screening and referral survey in the Denver, Colorado, public schools, in which the cumulative records of 996 children in grades one through twelve were analyzed. Each of these children had received ten or more visual screening tests utilizing the Snellen eye chart. Among her findings were the following: (1) 24.6 per cent of the Denver children were referred for vision evaluation by a specialist; (2) of those children referred to an eye specialist, 64 per cent were in kindergarten and elementary school; and (3) of those children referred to a specialist, no visual corrections were made for 17 per cent.

Periodic eye examination is the ideal method of early discovery of visual defects among school children. However, when such examinations are not possible, periodic eye screening and observation by the classroom teacher are essential in order to locate those children most likely to need attention.

Teacher Checks

The teacher can perform a rough check on the condition of the eyes by placing her thumbs on the lower eyelids just below the eyelashes. The lower lids are pulled down to explore the conjunctiva. The teacher observes the color of the inside of the lids and the clearness of the white part of the eye. A pale color instead of the healthy pink of the inside of the lids may indicate anemia or the lack of haemoglobin and red blood cells. If the conjunctiva of the lid is reddish in color and the blood vessels over the eyeball are enlarged so as to be visible, eyestrain may be indicated.

The whites of the eyes should be bright and clear. If they appear dark and yellow, this may be due to a dietary deficiency. If they are dull, it may indicate a lack of sleep or poor metabolism.

With the eyelashes closed, the teacher can observe them for white

² Gertrude E. Cromwell, "A Study of Visual Screening and Referrals on 996 Pupils during Their 12 Years School Experience," *Journal of School Health*, 22, No. 8 (October 1952), 229.

The procedures for giving the vision test with the Snellen chart are as follows:

1. Explain to the class the purpose of the test. Draw the E symbol on the blackboard and show the E in different positions. Have the children indicate with their fingers the direction in which the limbs of the E point.

2. Hang the chart in the appropriate place with the recommended illumination.

3. Place each pupil in a sitting or standing position with the eyes at a distance of 20 feet from the chart.

4. Give the child a card (3" x 5") to cover the eye not being tested. *Have the child place the card obliquely across the nose and keep the covered eye open.*

5. *If the child wears glasses, test with glasses and then without glasses.* Test both eyes first, then the left eye and right eye separately. Record in the same order.

6. Begin with the second, or 50-foot, line on the chart; proceed line by line until the 15-foot line is included, or until the child can no longer see the direction of the E's clearly. If the child has especially bad vision and cannot see the 50-foot line, start him with the top one (the 70-foot line). Move promptly and smoothly from one symbol to the next, accepting the child's first designation of each symbol. Move at the speed with which the child is able to keep pace.

7. Successful reading of three symbols out of four is evidence of satisfactory vision at the particular level.

8. Record each child's visual score as if it were a fraction. The numerator is the distance the child is from the chart; the denominator denotes the line read. A score of 20/20 is average acuity, and means that the pupil can read the 20-foot line from a 20-foot distance. A visual score of 20/70 indicates poor vision, as the child could only read the 70-foot line from the 20-foot distance.

The vision screening test, combined with the teacher checks previously considered, *should disclose those children in need of examinations by an eye specialist.* Consultation with or re-checking by the school or public health nurse may be advisable for these pupils. The results of all vision screening tests should be entered on the health record card.

HEARING SCREENING

The ideal method for screening children with hearing deficiencies is the individual pure-tone test, given with a discrete frequency audiometer. However, this method is time-consuming, therefore, a group pure-tone test, the Massachusetts hearing test, is used in many schools. A number of the schools throughout the country use the best available group test for mass screening and then utilize the individual pure-tone test for selected cases.

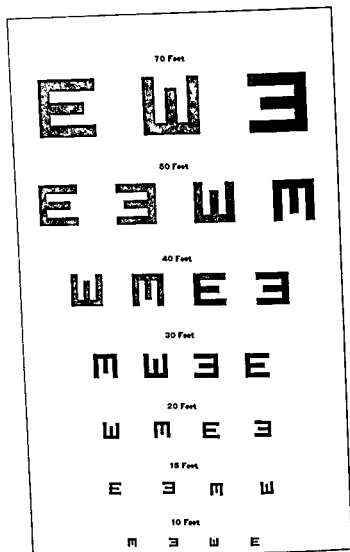


FIG 33 Eye Vision Chart for All Ages

candles, distributed evenly, without glare, over the chart. Good lighting can be devised from two 40-watt frosted light bulbs with reflectors, such as two gooseneck lamps, placed six feet apart and each three feet from the center of the chart. A light meter should be used to determine the foot-candles of light on the chart; if not available in the school, perhaps one can be borrowed from the local electric company.

tion department, or the local or state medical society on hearing problems encountered with individual children.

WEIGHING AND MEASURING

Teachers should keep a record of each pupil's weight and height, with the dates when such records were last made. Usually these records are taken three times a year—September, January, and May—and the results placed on a cumulative health record chart. Changes from time to time are emphasized primarily for comparison within the group and for growth change in each individual pupil. It is more important for the teacher to know that a child is or is not gaining in weight than that he weighs a particular amount at a certain time. If a child fails to gain over a period of three or four months, it may indicate that a further study should be made of this pupil by his family physician.

Weighing scales should be checked for dependability twice a year; and they should be adjusted for proper balance on each occasion of use. The pupils should be weighed wearing as little clothing as practicable, which will minimize the influence of seasonal and daily variation in the weight of school clothing. In making the weight measurement, the child's feet should be near the center of the platform of the scales; his hands should be free from contact with the head portion of the scales or any other object. Record the weight to the nearest one-half pound.

The most reliable method of measuring height is with the child standing against an upright board or wall without wainscoting. After a height scale has been tacked to the board or wall, the child should remove his shoes and stand with his heels, buttocks, and upper back contacting the wall or board. The arms should be at the side in a natural manner, head erect. The height should be taken by placing some square object such as a chalk box with one of the square ends against the tape on the wall, and the long side resting on the highest point of the head. The right angle of the square against the tape will indicate the height. The height should be recorded in inches and quarter-inches.

Children today are taller and heavier than those of a generation ago, not only in the United States but also in other countries. Acceleration in the rate of growth of school-age children reflects a number of factors. Of major importance is increased knowledge of the principles of good nutrition, as well as the availability of a wide variety of foods and the rise in living standards. Another factor has been the decrease in debilitating diseases among children. Most of these diseases have been diminished as the result of the immunization program in the schools and communities with the cooperation of the public health departments and the medical profession. The program in health education, which provides proper knowledge of desirable daily living habits, has also had a salutary in-

Audiometric testing to screen boys and girls with hearing trouble is most desirable, however, this type of testing requires special equipment and a trained tester. Some school systems have adopted the practice of either engaging a specially trained person to give these tests in all the schools or securing a hearing specialist from the local or state health department. Nevertheless, in many school systems throughout the country, the classroom teacher is the only one to give some type of hearing screening tests. The teacher screening tests (non-audiometric) are crude devices, but will help especially in extreme cases of hearing loss. Two such tests are described below.

Watch-tick Test

The watch-tick test should be given in a quiet room with a watch that can just be heard four feet from the ear. Directions for giving this test are as follows:

1. Stand behind the child seated in a chair. With one hand, hold a postal-size card at the side of the head, which will serve as a "blinker" to keep him from seeing the watch.

2. With the other hand, hold the watch with palm toward one of the child's ears and on a level with it. Start testing by holding the watch a one-foot distance from the ear; if the child can hear it, move it back one foot at a time until the tick is no longer discernible. Test the other ear in the same manner.

3. Hearing by this test can be scored by use of a fraction. In this instance, the denominator is the longest distance at which most children can hear the watch tick; the numerator is the longest distance at which it is heard by the child being tested.

Voice Test

The voice test may also be used by the classroom teacher as a crude hearing screening procedure, as follows:

1. The pupil is placed 20 feet from and with his back to the teacher. The pupil closes the ear not being tested with his hand, so that he does not hear from it.

2. In a conversational voice, the teacher pronounces disconnected numbers, such as 247, 819, and so forth, or words or short sentences. The child repeats what the teacher says. If he cannot hear at 20 feet, the teacher moves up to 15 feet, and further if necessary. Test the other ear in the same way.

The pupil who cannot hear with either the watch-tick or the voice test at one-third the distance established may be in need of medical attention; therefore he should be referred to a specialist. The classroom teacher may wish to consult with the state or county board of health, the state educa-

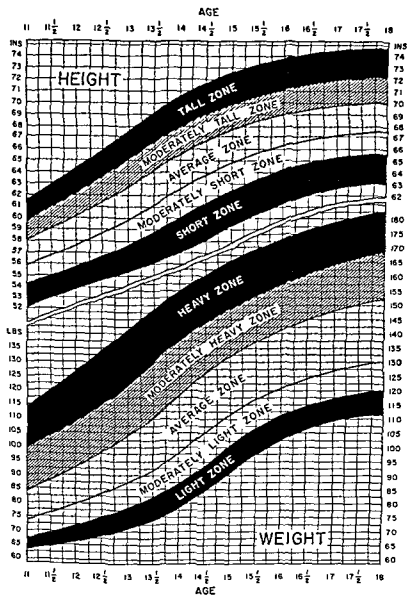


FIG. 34 (cont.)

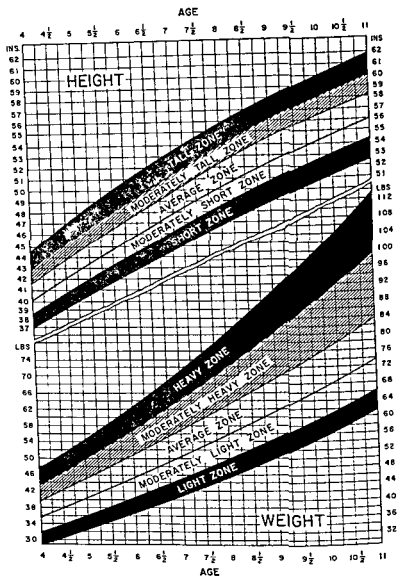


FIG. 3.4 Physical Growth Record for Boys

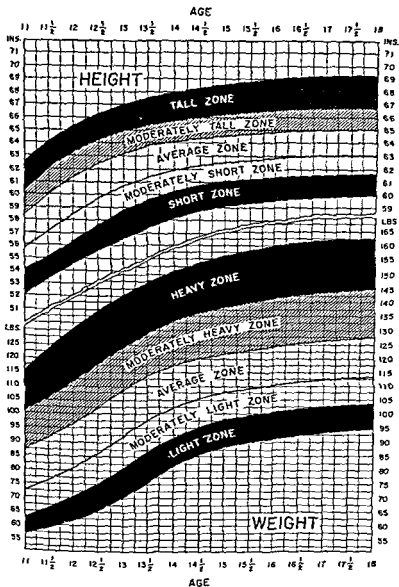


FIG. 3.5 (cont.)

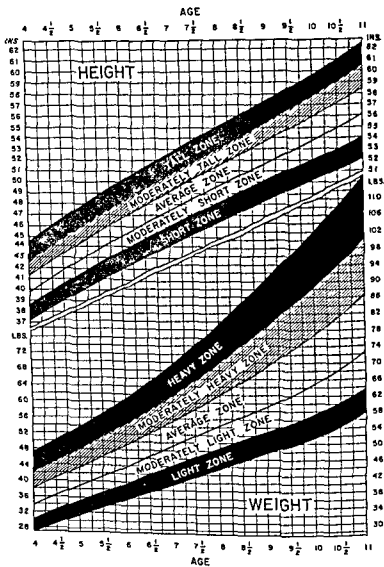


FIG. 35 Physical Growth Record for Girls

curves moves into another zone upon repeated tests, the reasons for such changes should be examined.

The classroom teacher can secure the Physical Growth Records from the American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois; full directions for their use accompany the charts.

Wetzel Grid

Another growth chart is the Wetzel Grid,⁵ as shown in Fig. 3.6. This Grid with instructions for its use can be purchased from NEA Service, Inc., 1200 West Third Street, Cleveland 13, Ohio.

As Fig. 3.6 on pages 80 and 81 shows, the Wetzel Grid has nine channels (counting the two outside ones), as follows: A₁, obese; A₂ and A₃, stocky; A₄, M₁, B₁, good; B₂, fair; B₃, borderline; B₄, poor. The child's position on the grid is plotted from his height, weight, and age. From this plotting, his developmental level and his age schedule of development are determined; repeated plottings from periodic testing indicate the direction of his growth and development. If the child's growth is normal, even though he has a thin build, he will stay in the same channel as time goes on, moving up the channel progressively. But if malnutrition, fatigue, or illness hampers growth, the child slips out of his accustomed channel.

The illustration on the chart is for a boy 10 years of age, with a weight of 55½ pounds and a height of 50 inches at the time of initial testing. On the grid, his plot fell in channel M; from the "clinical ratings," lower left on chart, he is classified as "good." The boy's developmental level is 66, as shown by the diagonal lines crossing the channel.

The pupil's age schedule of development can be plotted on the right side of the grid. Thus, with a boy of 10 years, whose developmental level is 66, the age schedule is approximately 90 per cent. To interpret, 90 per cent of boys have reached the 66th level in the channel as early as 10 years, as far as rate of development is concerned, so this boy is retarded. The 67 per cent auxodrome, as these lines are known, is taken as the standard of reference for determining whether a child is advanced, normal, or retarded. Other features of the Wetzel Grid will not be described here.

The Wetzel Grid has definite possibilities for use in detecting nutritional and growth disturbances in children. The main weakness seems to be a lack of assurance that the child is actually placed in the best channel for him at the time the initial measurements are made. If the child is wrongly placed at that time, an improper growth pattern could well be fostered.

⁵ Norman C. Wetzel, *The Treatment of Growth Failure in Children* (Cleveland, Ohio: NEA Service, Inc., 1948).

fluence on the development of the school-age child. However, there are other criteria to be considered in the total evaluation of child health, such as physical and motor fitness, neuromuscular coordination, vitality, endurance, and emotional stability.

HEIGHT-WEIGHT CHARTS

A number of height-weight charts are available for use by the classroom teacher. From these charts, the growth pattern of school children can be followed over the period of their elementary school grades and beyond. These charts will be valuable to the teacher in helping boys and girls achieve maximum development within their respective structural patterns.

Meredith Growth Chart

The presentation of height-weight norms in terms of curves has a decided advantage when plotted against the pattern of growth of a representative sample of the child's own age group. The rationale for such curves is that a child growing at a normal rate tends to maintain his relative position with respect to his age group. An example of a height-weight chart of this type was prepared by Howard V. Meredith,⁴ of the State University of Iowa Child Welfare Research Station, as shown in Fig. 3.4 for boys and in Fig. 3.5 for girls.

The classroom teacher will note that each chart has five zones for height and five zones for weight. The height and weight tests are given in the manner described above. These scores are then plotted on the chart in accordance with the child's age. Normally, the pupil's height and weight points fall in like zones, such as tall and heavy or average and average. When they do not fall in like zones, as, for example, if they fell in average and moderately heavy zones, the dissimilarity may indicate stockiness or slenderness of build, or it may be related to his state of health. To illustrate, if a boy's height plot is in the average zone and his weight plot is in the light zone, he may be a healthy child of slender build. On the other hand, he may have some infection, need an improved diet, or require changes in his daily living habits; thus, this case should be investigated and possibly the boy should be referred to the school nurse or the family physician.

Generally, also, the child's height and weight curves should follow the same zones as he is re-tested from time to time; this procedure gives some idea as to whether he is growing satisfactorily. If either of the child's

⁴ Howard V. Meredith, "A Physical Growth Record for Use in Elementary and High Schools," *American Journal of Public Health*, 39, No. 7 (July 1949), 878.

Name No.

DATE OF
BIRTH

M F

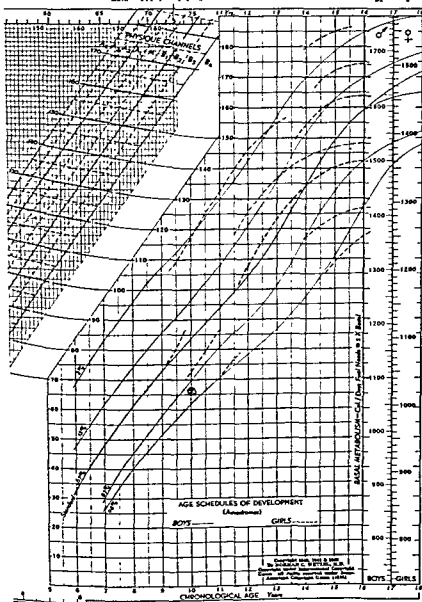
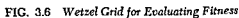


FIG. 3.6 (cont.)

GRID for Evaluating PHYSICAL FITNESS
in Terms of PHYSIQUE (Body Build), DEVELOPMENTAL LEVEL and BASAL METABOLISM
— A Guide to Individual Progress from Infancy to Maturity —



Time of Eruption and Shedding of Primary Teeth

<i>Upper Jaw</i>	<i>Eruption</i>	<i>Shedding</i>
Central incisor	7½ mo.	7½ yr.
Lateral incisor	9 mo.	8 yr.
Cuspid	18 mo.	11½ yr.
First molar	14 mo.	10½ yr.
Second molar	24 mo.	10½ yr.
<i>Lower Jaw</i>	<i>Eruption</i>	<i>Shedding</i>
Central incisor	6 mo.	6 yr.
Lateral incisor	7 mo.	7 yr.
Cuspid	16 mo.	9½ yr.
First molar	12 mo.	10 yr.
Second molar	20 mo.	11 yr.

Since the primary teeth have definite functions to perform, they should ordinarily be retained until lost naturally. They are for chewing, for good speech habits, for appearance, and to preserve space for the permanent teeth.

THE PERMANENT TEETH. There are 32 teeth in the permanent set, 16 in each jaw. The calcification of permanent teeth begins at birth with the first (six-year) molars and continues with other teeth thereafter. Each type of tooth comes in sets of four, two in the upper arch and two in the lower arch. The position of the first permanent molars helps to determine the shape of the lower part of the face, so these teeth are particularly important.

Time of Eruption of the Permanent Teeth

<i>Upper Jaw</i>	<i>Years</i>	<i>Lower Jaw</i>	<i>Years</i>
First molar	6-7	First molar	6-7
Central incisor	7-8	Central incisor	6-7
Lateral incisor	8-9	Lateral incisor	7-8
First bicuspid	10-11	Cuspid	9-10
Second bicuspid	10-12	First bicuspid	10-12
Cuspid	11-12	Second bicuspid	11-12
Second molar	12-13	Second molar	11-13
Third molar	17-21	Third molar	17-21

OTHER DENTAL CONDITIONS. A number of other dental conditions exist, about which the teacher should know and which she should learn to recognize when present among her pupils. Four of these will be described briefly here.

1. *Tartar*: A brownish or greenish incrustation formed by a mixture of calcium carbonate and organic matter derived from the saliva. Tartar most often collects on teeth that are not brushed daily.

2. *Gingivitis*: An inflammation of the gums characterized by tender gums that bleed easily.

DENTAL HEALTH

The importance of sound dental health to the total well-being of the individual pupil in the elementary school is generally recognized by both health workers and educators. Practically all research studies and surveys of dental health needs reveal a high incidence of dental disease in most communities throughout the United States. The ravages of this disease result largely from the complications of accumulated dental disorders starting early in life and continuing through adult life.

No other disease requires as much stress on preventive and control measures as does dental caries. Dentists agree that a child who has learned and who practices good dental health habits has a much better chance of retaining his natural teeth in good health throughout life than does a child who has grown up in an environment of dental neglect. For this reason, the American Dental Association encourages a sound school dental program and makes available to teachers dental health teaching guides and other instructional materials at a nominal charge. Most states have a division of dental health within their state health department; these divisions are willing to aid the schools in setting up a dental health program.

Today, dental disease can be controlled. In order to do so, however, experience has shown that an initial period of intensive education is required, followed by a long-term program to present and reinforce new ideas. Children and adult attitudes toward dental care must be changed before a permanent modification in behavior can be expected. The health records of children needing dental care convincingly indicate that, although progress has been made, there is still a long way to go before dental diseases will come under full control. A vital step in this direction consists of the regular visits of children to a dentist, starting during the preschool period and continuing twice a year during their school years.

Dental Facts

The first-grade teacher will find that most of her pupils will be erupting their first permanent teeth, the four six-year molars; almost all of their permanent teeth have appeared by the time they graduate from high school. Thus, the time schedule for the eruption of teeth and other facts pertaining to the teeth may be of interest to the classroom teacher.

PRIMARY TEETH. There are 20 teeth in the primary (baby) set, 10 in each jaw. The teeth buds begin to form about the sixth week of prenatal life. The calcification process advances rapidly, and at birth a considerable part of the crowns of the deciduous teeth is already formed. The primary teeth erupt and shed through normal processes at varying times. The average schedule follows:

2. Assist children, parents, and teachers in making plans for dental correction.
3. Assist parents who cannot afford to pay to obtain dental treatment for their children.
4. Assist classroom teachers in their dental health instruction program by providing teaching materials and by aiding the classroom teacher to plan dental health activities for the classroom.
5. Aid the teacher in keeping records or reports of inspections and corrections.
6. Assist the teacher in parent education programs through the Parent-Teacher Association and other organizations.
7. Assist school officials in in-service training programs in dental health for classroom teachers.

These services should be approved by the local dental society and public health department. If a local community does not have a dental hygienist available, a public health nurse may take over many of the activities outlined for the dental hygienist. She may assist in the follow-up program for such pupils who need dental treatment. The public health nurse does this most effectively in her home visits with parents or in conferences conducted in the school. She may also work cooperatively with community agencies in an effort to arrange needed dental treatment. She can be very effective in informing parents of the need for regular dental care.

Parent Notification

Whether the dental examinations are made in the school or at a dentist's office, a plan must be devised so that the parents will be informed of the results of the examination. The form used need not be complicated and can be prepared cooperatively by school officials, the public health department, and the dental society. The American Dental Association recommends one such form; this form is shown in Fig. 3.7 on page 86.

Follow-up

Dental examinations are of no value if the defects discovered are not corrected. There will be many pupils who will not have their dental needs met immediately, and it will be necessary for the classroom teachers, school nurses, and other school health personnel to make additional contacts with the parents. Some methods to follow are: writing follow-up letters to the parents, holding teacher-parent conferences, conducting parent conferences with school nurse or dental hygienist, and sending dental health information to the parents. Much help in organizing the dental follow-up process can be obtained from local dental and public health departments. Free or inexpensive materials are available for use in the classroom and for distribution to parents. If a local dental society

3. *Vincent's Infection*: A disease which attacks the gums as well as other parts of the mouth and throat. In World War I, this condition was commonly known as "trench mouth." Lowered tissue resistance and unhygienic conditions are factors associated with this disease.

4. *Pyorrhea*: Literally means a discharge of pus. Pyorrhea usually affects the periodontal membrane; if it is not checked, the teeth become loosened.

Teacher's Role

The classroom teacher can perform important functions in securing and maintaining the dental health of her pupils. One such function is to note any deviations from a healthy mouth and to encourage corrective measures through the school nurse and/or parents. Among the deviations which she may check are the following:

1. Decay of either the primary or the permanent teeth.
2. Persistent toothache.
3. Reddened and swollen gums.
4. Faulty oral hygiene, including chronic bad breath.
5. Very irregular teeth, particularly the upper teeth.
6. Speech defects which may be associated with abnormal conditions in the mouth.

The first-grade teacher especially should be alert to any tooth decay of the six-year molars. These molars are the first permanent teeth. Frequently, parents consider them just more "baby" teeth, to be lost later as a matter of course. Thus, they are prone to neglect these teeth; the teacher can alert the child and the parents to this situation.

The classroom teacher can also instruct her children on the types of food to avoid for good dental health. Sweets, particularly, are readily converted into acids in the mouth by the action of bacteria. Thus, the children should be urged to reduce the amount of refined carbohydrates eaten, milk, nuts, and fresh vegetables should be substituted for the candy, pastry, and sweet drinks so relished by children. In this respect, maintenance of good mouth health promotes good general health. Consideration of the school lunch program provides an excellent opportunity to discuss the importance of diet for both general and dental health.

Dental Hygienist

Many local school systems employ dental hygienists to assist with the dental health program. Most dental schools have an accredited program for the training of these specialists. Following are ways by which the dental hygienist can help the classroom teacher seek the maximal dental health of her pupils:

1. Interpret children's dental defects to school personnel and parents.

The classroom teacher's knowledge of the child's health is obtained from the health inspections, from the daily observations in the classroom, and from contacts with the parents. The sharing of this information by the parent, the teacher, the nurse, the dentist, and the physician is an essential part of the health care of boys and girls. Usually, the teacher's observations are discussed in a teacher-nurse conference, which includes further evaluation of the child's health and a consideration of further action to be taken in order to improve his health status.

The teacher-nurse conferences should be held at least three times a year: at the beginning of the school year, after the medical examinations are given, and at the close of the school year. These conferences should be educational in nature, with the purpose of correcting the health defects of the pupils and in other ways improving their health. This conference should provide the following:

1. Assisting the nurse with teacher observation.
2. Evaluation of the teacher's observations.
3. Interpretation of the dental and medical findings listed on the health examination blanks.
4. Information concerning the special needs of pupils within and without the school.
5. Plans for the follow-up of the findings.

EMERGENCY CARE AND FIRST AID

Accidents constitute the chief cause of death and disability among all persons from ages 1 to 36 years; more children between 1 and 14 years of age are killed from accidents than from any disease. Thus, accidents are eliminating members of this group at a time of life which is relatively free from disease.

The protection of children from serious accidents has long been recognized as a school's primary responsibility. This principle was accepted as one of the goals in education adopted in 1930 by the Children's Charter, White House Conference. Thus, the school should be involved in accident prevention and in maintaining a safe environment in classrooms, laboratories, and playgrounds. Every school should have a planned, written program for the care of emergencies. In the case of an accident or sudden illness, the school should give immediate care, should notify the parent or guardian, and should supply transportation of ill or injured pupils when this is indicated.

Immediate Care

The classroom teachers, the maintenance staff, and the bus drivers are all likely to be in a position where they will have to administer first aid. Thus, everyone on the school staff should have some training in first aid; at least one person in each school should be well qualified in this field.

REPORT OF SCHOOL DENTAL INSPECTION

Parent or guardian _____

A dental inspection of your child _____
has been made. The inspection shows

☐ 1. Need for dental attention. It is recommended
that your family dentist be consulted as soon as
possible

☐ 2. No readily apparent dental defects. However, it
is recommended that your child visit your family
dentist for a more complete examination.

_____ Date _____ Signed _____

(Front)

CERTIFICATE OF DENTAL WORK DONE

This is to certify that the bearer

☐ 1. Has had all necessary dental work completed.

☐ 2. Is under dental treatment.

☐ 3. Is in need of no dental work at this time

Further recommendation _____

_____ Date _____ Signature of Dentist _____

PLEASE RETURN THIS CARD TO THE TEACHER

(Back)

FIG. 3.7

is not available, the teacher can write to the American Dental Association, 222 East Superior Street, Chicago 11, Illinois.

CLASSROOM TEACHER-NURSE RELATIONSHIP

The health appraisal of elementary school children is an area in which both classroom teacher and school nurse can work together, each sharing her special knowledge and learning. A unified effort on the part of school personnel and school health professional educators is required to achieve the health education objectives of today's modern curriculum. Both the classroom teacher and the nurse occupy strategic positions: the teacher, because of her close contact with the pupils in her particular class, and the nurse, because of her professional preparation in the health and medical sciences.

5. Analysis of these records permits the school to evaluate its safety education program.

Causes of Accidents

The major causes of accidents in the school are as follows:

1. Lack of knowledge of students' skills and of attitudes of the students toward certain activities.
2. Lack of sufficient supervision and leadership.
3. Taking chances on advanced skills when the student has not acquired the basic skills of an activity.
4. Unsafe environment and equipment.
5. Personal causes, such as physical handicaps, and emotional immaturity.

The classroom teacher can check the equipment of the playground periodically for any defects. These should be reported immediately to the administrator or the supervisor of health and physical education.

RECOMMENDED FIRST-AID PROCEDURES

Each school should have written policies on first aid approved by the school, the local health department, and the local medical society. In general, no treatment except first aid should be permitted in the schools, and even this treatment is restricted to injuries occurring in areas under the jurisdiction of the school. No drugs should be given, with the exception of aromatic spirits of ammonia in the case of fainting. As soon as the injured child is placed in the care of the family or physician, the school's responsibility for this care is ended.

First-aid Supplies

Each school should be equipped with an adequate first-aid cabinet containing proper supplies for use in emergency care and first-aid treatment. The following procedures are recommended for supervision of the first-aid cabinet:

1. A responsible person should be placed in charge of the first-aid cabinet. His or her name should be posted on the cabinet. Names of other school personnel who have completed a first-aid course should also be posted.
2. A check with the local Red Cross or medical society should be made as to the equipment needed for the first-aid cabinet. Usually the health and physical education department of the school system posts a set of written instructions on the use of the first-aid cabinet on or near it.
3. A suitable place should be designated in which to give first aid and emergency care. A cot and blankets should be available in this area.
4. The latest edition of the *Red Cross First Aid Manual* should be provided for use of the first-aiders.

Sufficient first-aid supplies should be provided in a well-organized first-aid cabinet which should be readily available for use when needed. The teacher should have access to personal information about the pupils in case of any emergency, usually this information is in the principal's or nurse's office. This information should include:

1. The correct address of each pupil, with home phone number and father's and/or mother's business phone number.
2. Name and telephone number of the pupil's family doctor.
3. Name, address, and telephone number of the closest hospital.
4. Name, address, and telephone number of a relative, or close neighbor, if parent cannot be reached.
5. Notation to refer to permanent health record card in cases of pupils who have such conditions as diabetes and asthma or who are "bleeders."
6. Indications as to whether the child is enrolled in a school or private accident insurance program.
7. Inclusion of special instructions of care to be given, signed by the parents, in case the child is of the Christian Science faith.

If the accident is severe enough to warrant more than first-aid care, the parents of the pupil should be notified. This can usually be done by telephone. If medical or hospital care seems indicated, the parents should be asked to state the physician or hospital to be contacted. In less serious cases, the parents may wish to come to the school and get the child.

Accident Reporting

Each school should set up a routine procedure for reporting accidents, keeping a yearly record for further evaluation of their safety program. Accidents should be reported on a special pupil accident report form established by the school or district, in order to permit uniformity in analyzing accident records. Some states have a special accident report form which is used in all the public schools throughout their state. As an example, the form used in the Pittsburgh public schools is shown in Fig. 3.8. The accident report form issued by the National Safety Council, 425 North Michigan Avenue, Chicago 11, Illinois, is a well-recognized form which is used by many schools throughout the United States.

The values of maintaining accident records in the school are as follows:

1. Data on the causes of accidents are obtained for future use in studying ways by which the number and severity of accidents may be reduced.
2. A better knowledge of physical environmental hazards is obtained, for use in determining safety precautions as related to facilities and equipment.
3. A basis for furnishing guidance to pupils and parents on ways to avoid accidents is provided.
4. Safety-prevention materials become available which may be used in securing community support in accident prevention.

applied through a sterile gauze pad. If the bleeding continues, a cloth tourniquet should be applied above the site of the wound. Medical attention should be obtained immediately.

BURNS. There are three types of burns, as follows: (1) Heat: Do not wash but apply thick, dry, sterile dressing. Hold firm with bandage. For severe burns, get medical attention immediately. (2) Sunburn: Apply burn cream or oil. (3) Chemical (acid or alkali): Wash thoroughly with water; then apply a thick, dry, and sterile dressing. For severe and painful chemical burns, immerse in cold water until pain subsides; then treat with dressings. Chemicals in the eyes should be flushed out immediately with water; obtain medical services immediately.

All classroom teachers should read the *Red Cross First Aid Manual* for further instructions.

ARTIFICIAL RESPIRATION. There are several methods of artificial respiration in use, but the mouth-to-mouth method is recommended by the American Red Cross, the Armed Forces, and public health organizations. Only the fundamentals of this method will be listed here; the classroom teacher should contact her local Red Cross or local public health department for pamphlets describing the method in detail.

1. Place the person on his back, and pull his jaw down and back. The front of the neck should be stretched and the head tilted backward.

2. Insert your thumb between his teeth and open his mouth, but not too wide. You must be able to cover it completely with your own mouth.

3. Take a deep breath and blow forcefully into the victim's mouth; blow more gently if it is a very young child. During the first minute, blow quite rapidly, then slow down to 20 times a minute for young children. With older children and adults, use your thumb to clamp the patient's nose shut and blow air in only 12 times a minute.

4. As soon as you see his chest rise, remove your mouth so that he can exhale. Then repeat the cycle of breathing into his mouth and letting him exhale naturally. In young children it may be necessary to press the abdomen gently to prevent too much air from accumulating.

5. When he begins to breathe by himself, continue to assist by blowing into his mouth as he exhales; do not give up too soon. This technique takes little effort and can be continued for a long time.

Safety Hints

Safety in the elementary schools is a cooperative venture of teachers, administrators, pupils and community safety organizations. Classroom teachers can obtain much printed information from their state public health department, from their department of motor vehicles, and from national organizations such as American Red Cross, National Safety Council, American Association for Health, Physical Education and Recreation, American Automobile Association, Bicycle Institute of America,

5. The school nurse or the public health department should inspect the first-aid cabinet and its supplies about twice a year; reports of these inspections should be sent to the school principal with any necessary recommendations.

The school should consult with the school physician or other local medical personnel as to the contents of the first-aid cabinet. Usually, the minimum contents are considered to be as follows:

Adhesive compresses, 1 in.	Package of 100
Sterile gauze squares, 3 by 3 in.	Package of 25
Triangular bandages	Package of 3
Large first-aid sterile burn dressing, 18 by 24 in.	Package of 2
Adhesive tape, $\frac{1}{2}$ in.	Package of 3
Roller bandages, 1 in.	Package of 6
Roller bandages, 2 in.	Package of 6
Tongue depressors	Package of 100
Roll of sterile gauze, 4 in. wide by 5 yd. long	1
Adhesive tape, 1 in.	1
Tourniquet cloth	1
Splints, yucca or metal	6
Absorbent cotton, sterile	$\frac{1}{2}$ lb.
Applicator sticks, cotton tip	25
Ammonia (Aspiral No. 1)	1 box of 4
Skin cream or burn ointment	1 tube
Baking soda (bicarbonate of soda)	1 package
Table salt	1 package
Soap cake or phisohex, 4 oz.	1 cake or bottle
Flashlight	1
Scissors, blunt-end	1
Splinter forceps, 3 in.	1
Safety pins, medium-size	24
<i>American Red Cross First Aid Textbook, latest edition</i>	

First-aid Treatment

A complete consideration of first-aid treatment is beyond the scope of this book. As previously indicated, the availability of the latest *Red Cross First Aid Manual* is essential for school use. Below, however, four major types of treatment are presented briefly for the special benefit of elementary school classroom teachers.

WOUNDS. All wounds should be considered potentially dangerous and every precaution should be taken to prevent tetanus. For minor wounds, wash hands thoroughly with soap and water. Then clean the injured area thoroughly with soap and water or phisohex and running water; then apply a sterile dressing. Cover with a dry sterile dressing and hold in place with a bandage.

BLEEDING. Do not apply a tourniquet unless all other efforts to stop the bleeding have failed. Bleeding can usually be stopped by pressure

The health appraisal for each child should include the following: health history, including health habits and behavior, past illnesses, and immunizations; height and weight measurements; an evaluation of musculoskeletal system and heart and lung examinations; tests for vision and hearing impairments; and any other abnormalities observed by the teacher, nurse, and doctor.

The classroom teacher plays a key role in the health program, since she is so closely associated with the pupils during many hours each day. She can observe and detect many deviations in the appearance and behavior of her pupils. However, she should not attempt to diagnose these abnormalities but, rather, should refer the child to his parents for attention or for further examination by the family physician.

The teacher usually conducts the following screening tests: height and weight measures, vision and hearing tests, and checks for unusual health behavior and any physical deviations. These observations should be recorded on the pupil's permanent health record card. The teacher should also seek assistance from the school or public health nurse in evaluating these conditions.

The health status of each child should be recorded on a special health record form, and these health records should follow the pupil from grade to grade and from school to school. It is important that these records be kept up to date and that they be checked frequently to see that the corrections of the defects found in these examinations have been made. The follow-up procedures seem to be the weakest link in the health appraisal of pupils. The teacher can obtain much help in her health work from the nurse, school health personnel, and community health organizations. These records are also valuable for the teacher-nurse conference in the health discussion concerning the pupil's health status.

In the school's health service program, too, the classroom teacher has an important role in the emergency care of illnesses and in applying first aid following injuries which may occur in the school. She should be alert to safety precautions in the avoidance of injuries; some training in first aid would be very desirable.

SELECTED REFERENCES

- American Medical Association, *Report of the Seventh National Conference on Physicians and Schools*. Chicago, Ill.: American Medical Association, 1960.
- Oregon State Department of Education, *Health Services for the School-Age Child in Oregon*. Salem, Oreg.: State Education Department, 1958.
- Wheatley, G. M. and G. T. Hallock, *Health Observation of School Children*. New York: McGraw-Hill Book Company, Inc., 1956.
- Wilson, Charles G., ed., *School Health Services*. Washington, D.C.: National Education Association, 1953.

American Medical Association, and National Commission for Safety Education of the National Education Association. Many of these materials are free of charge to teachers.

The following rules should be followed to help reduce the accident rate and to make the schools a safer place in which to live and study:

1. During free-play periods, the number of pupils in any one play area should be restricted and carefully supervised.
2. Classroom teachers should do a thorough job of supervising stairways and should include this area in their health instruction on safety.
3. The class size in the physical education program should be the same as the desirable number for a regular classroom period.
4. The classroom teachers should teach the techniques of safety along with the activity skills on the playground and in the gymnasium.
5. All playground equipment and apparatus should have some kind of resilient material underneath them.
6. All noon-hour activities should be properly supervised.
7. A yearly evaluation should be made of the accidents that occurred during the year. Suggestions for improvement should be made.

SUMMARY

The elementary school age period is one in which the physical and mental health status of the child must be constantly observed by the teacher, parent, and professional personnel in the health sciences. These daily and periodical observations and appraisals must be seriously reviewed if the optimal growth and development of children are the health objectives desired. The growth of the child is a continuous process following him throughout his school life, and this process continues after his public school experience throughout the rest of his life.

Many voluntary and professional health agencies in the community where the schools are located contribute to the growth and education of each child in the elementary school. The school has the opportunity to direct this educational growth process, because the child spends much of his time in the classroom. However, the community agencies act as consultants in aiding this growth process; these agencies include the local health department, the local medical and dental societies, and such voluntary health agencies as the tuberculosis, polio, heart, and cancer organizations. The chief function of the school is to develop the individual by means of motivating him in his physical and emotional health.

Health status is an individual responsibility, and the health service program is shared by many groups; but the parents should have the primary responsibility for the health of their children. The schools can help in this through the educational process by explaining the values of the health examination and the necessary medical care needed to assure the child of his optimal health.

The development of school health programs in many sections of the country results in pupils obtaining limited views of health. Thus, some pupils think of health as merely a subject that has no direct relation to daily living, or that it is one of the fringe benefits of education, or that it has no association with their environmental and cultural backgrounds. The inclusion of such factors as these is essential for the proper health image; they should neither be neglected nor permitted to remain as unrelated parts.

Total Health

Mens sana in corpore sano, the Latin phrase which means a sound mind in a sound body, is the keystone for sound total health. There are numerous individual differences in the child's total health potentialities at birth, and these differences become fixed as environmental forces leave their mark. Basic needs of boys and girls are seldom altered, but their understanding of these needs may change from year to year.

The physical, biological, sociological, and health sciences supply the basic knowledge for current understanding of the individual's basic needs and the processes to be followed in order to meet them. Supplying this type of knowledge is a vital function of health instruction in elementary schools. Without this scientific background, many health practices advocated today may seem irrational. Examples of health practices which need such scientific justification are proper care of the teeth and proper diet to prevent tooth decay, immunizations, fluoridation of the public water supply, physical exercise, and pasteurization of milk. Teachers must find important applications for proper health knowledge in the daily lives of the children in their classrooms.

Various social changes in today's society have complicated the realization of total health by boys and girls. Among the more obvious of these changes are the following: In many families, both parents have some type of employment; as a consequence, children are on their own during parts of the day and, frequently, the family as a unit has lost or is in danger of losing its identity. Leisure time has increased tremendously, so that individuals, families, and communities must consider ways by which this free time may be used properly and effectively. The standard of living has increased greatly, so that people can afford to be entertained and amused; thus, many children (and adults) indulge primarily in the "art of stititis," watching games, television, and motion pictures. Here, again, the sciences have increased our alertness to the problems created by these social changes; the sciences have also contributed facts which may be used in the solution of these problems. Obviously, this type of information should be generously used by classroom teachers in their health instruction.

Without perspective, the teacher cannot see health as a whole. Seeing

Chapter

4

Health Instruction

THE IMAGE OF HEALTH

THE IMAGE OF HEALTH that teachers carry in their minds determines to a large extent how they will respond to the challenge of presenting a dynamic health program to their pupils. An essential view to this end consists of seeing health as a totality, a whole, rather than viewing it as a number of separate parts.¹

Parts Versus the Whole

Seeing health as parts has been quite typical of many teachers; such a view inevitably results in an incomplete or fragmented image of health. One incomplete image of health is that health is only freedom from disease or the absence of physical defects. This negative concept dominated health thinking in the early 1900's, and it still exists in some places today. The germ theory gave impetus to this concept, as it early opened up various new ways of controlling communicable diseases. This phase of health-disease prevention—was largely accomplished by sanitary measures applied to environmental conditions; these included the safeguarding of water and milk supplies.

The total image of health is much broader than disease prevention or the correction of physical defects. It includes the improvement of physical fitness, as presented elsewhere in this book. Further, education for health must include a working knowledge of the structure and function of the body, the nature of disease, and proper living habits. It should combat the ignorance, indifference, and prejudice which block the intelligent use of medical knowledge.

¹ "Teacher Leadership in Health," *Health Bulletin for Teachers*, Metropolitan Life Insurance Company, 23, No. 2 (1960), 5.

individuals does not fulfill his health role, the child is the one who must suffer from this neglect.

SOCIAL PHILOSOPHY. The teacher must examine the relationships between school health education and the social and political philosophy of our society. Whatever is done in the name of school health education must meet the needs of the people. However, in meeting their needs, the capacity of each pupil for self-direction and his will to look after himself and his family must not be destroyed.

The school simply cannot afford to develop a health education program without giving thought to the moral values which can result from it. The teacher should not become so engrossed with the science of health instruction that she loses sight of those higher values so needed by society today.

Health Principles

Health teaching should be directed toward making changes that affect pupils' health behavior. To realize these changes, Turner, Sellery, and Smith³ have proposed the following principles for the guidance of teachers in conducting health instruction programs:

1. The same understanding of the child and of educational psychology as is applied to other phases of education should be used in health teaching.

2. The child should think of health as a matter of conduct, and not as a subject of instruction

3. Motivation should bridge the gap between knowledge and action.

4. The nature of habits should be recognized in health education. Habits are acquired.

5. The laws of learning apply to health education. The laws of readiness, exercise, and effect operate in building a habit.

6. Emphasis should be placed upon what to do rather than upon what not to do. Teaching should be positive, not negative.

7. The distribution of objectives and emphases will vary in different classes, but the goals in health education should be clear and specific.

8. Children should be commended for success. Successes rather than failures should be emphasized.

9. Particular care should be taken not to hold the child responsible for the improvement of conditions over which he has no control.

10. The teacher should help the child to see that the ultimate reward of health practices will be found in growth, in improved physical accomplishments, and in other concrete evidences of health.

11. Interest in growth is the best single incentive toward the improvement of health behavior in children.

12. The tendency of children to imitate those whom they admire is a force that may be used in developing improved health behavior.

13. Unhappy mental states should be avoided.

³C. E. Turner, C. Morley Sellery, and Sara Louise Smith, *School Health and Health Education* (St. Louis, Mo.: C. V. Mosby Company, 1957), p. 328.

health as a broad concept means envisioning total fitness for living. The classroom teacher should strive toward this end in her teaching. The teacher who sets an example in good health practices and who provides the right kind of leadership is able to help pupils form a complete image of health during their elementary school years.

HEALTH CONSIDERATIONS AND PRINCIPLES

Basic Considerations

Oberteuffer² has discussed basic considerations in understanding the essential nature of health instruction in the public schools. His considerations are three in number, designated as follows: the human entity, the need for cooperative effort, and the essential nature of the teacher's social philosophy. These three considerations are presented briefly below.

THE HUMAN ENTITY. What is the essential nature of the pupil? What is he like? Not nearly enough is yet known about him, but what is known makes it clear that he is an entity, one who retains his integrated character as long as possible in the face of adverse environment. He cannot be divided into discrete mental, physical, emotional and spiritual parts. The essential truth of man's unity has caused a recasting of the concept of health and a reappraisal of the effects of all that is done for its sake.

Health is not just a physical thing. It is not just a "state of physical well-being." It cannot be measured by pounds or feet, by dynamometers or audiometers. "Good health" is an expression of total function. In modern health education, the concept of "body" disappears; in its place is an evaluation of its effect upon the individual as a person.

Health, then, is related to the oneness of man. "Mind" and "body" and "spirit" disappear as recognizable entities. In their stead, boys and girls as whole beings emerge. The teacher needs to consider her pupils as totalities as she provides health instruction for them.

NEED FOR COOPERATIVE EFFORT. The need for cooperative efforts in the development of an effective health education program is becoming increasingly apparent. Health education in the past has been bothered by uncertain boundaries, by overlapping responsibilities, and, sometimes, by professional jealousies.

The school health program requires many people to make it operate successfully. It is not a one-man job. Responsibility for the health of children belongs to all who deal with them. Many talents are needed: educational, medical, nursing, nutritional, psychological, administrative, and the like. A realization that all personnel associated with children are important to their health and welfare is essential. If any one of these

² Delbert Oberteuffer, "Philosophy and Principles of the School Health Program," *Journal of School Health*, 22, No. 4 (April 1953), 103.

themselves, are set in their ways and unwilling to change their personal health habits. Furthermore, elementary-age children are more teachable and are more willing to accept new theories and newer concepts of personal and community health. A good example of this would be in the promotion of the latest concepts and research in the prevention of dental caries by means of the fluoridation of the public water supply. Children will readily accept the scientific evidence presented. However, a great many adults resist this practice, and it will be only through continued public relations over a period of time that fluoridation will be universally accepted.

Success, however, has been achieved in gaining acceptance for many health practices which, at one time, were controversial. Outstanding among the newer developments has been the introduction of antibiotics; these have saved a great many lives among young people who in the past would have died from pneumonia, endocarditis, meningitis, and other infectious diseases. Immunization programs have been effective in reducing the incidence of a number of childhood diseases. Improved sanitation has helped to reduce the communicable disease rates.

Some Unmet Health Problems

The progress made in advancing the health of American children must not obscure the many health problems that still exist. Many children are impaired by heart disease, cerebral palsy, epilepsy, diabetes, and poliomyelitis; many children are handicapped by visual or hearing impairments and by mental disorders. Steps to meet these health problems of children are urgently needed, as the number of children of school age will continue to increase at a rapid rate. It is estimated that the population under 21 years of age in the United States will increase from 75 million in 1960 to more than 88 million in the next 10 or 15 years.

A survey⁵ of physicians in private practice in the state of Washington showed that respiratory disorder—usually a condition of the tonsils and adenoids or the common cold—was the primary complaint among children of ages 5 to 14 years in about one-fourth of home or office visits. Accidental injuries, principally lacerations of the face and fractures of the upper limbs, ranked next in frequency, accounting for 15 per cent of the visits. Sizable numbers of cases were reported for eye and ear disorders and for allergies such as hay fever and asthma. Health check-ups and immunizations accounted for 7 per cent of all physician visits for children of these ages.

The multitude of absences that occur in the United States among the 1,250,000 schoolteachers constitute over five million days each year.⁶

⁵ Seymour Standish, *Why Patients See Doctors* (Seattle, Wash.: University of Washington Press, 1955).

⁶ Harriett B. Randall, "Respiratory Infections in Schools," *Journal of School Health*, 32, No. 5 (May 1962), 195.

tained and learned in the elementary grades need continued reinforcement in order that they may become habitual through satisfying experiences.

Health instruction should not only consider personal applications, but should stress the need for helping others toward healthful living. Community health is also important in health instruction in the elementary school. The newer concept of health includes consideration of what the pupil knows, feels, and practices in health at school, in the home, and in the community.

PUPIL HEALTH INTERESTS AND NEEDS

Some of the best programs in the area of health instruction use as a criterion the health interests and needs of the pupils in the particular class or school. The basic health problems found in the state and the community should also logically be included in the school's health instruction program.

An excellent approach to the selection of subject matter for health instruction, then, is to analyze the health problems actually encountered by the children at home, at school, and in the community. These problems may be identified in a number of ways, including the following: (1) use of questionnaires, inventories, and interviews, (2) analysis of the personal habits of the children; (3) analysis of the health examination findings of the children, including the teacher's observations and the results of screening procedures; (4) reports of pupil and community health needs resulting from state and national surveys by professional and public health organizations.

An excellent survey to determine the health interests and needs of pupils in a local situation was conducted in the Denver, Colorado, public schools.¹ In this study, a health research committee set out to discover the interests and needs of pupils as a basis for providing the most meaningful health experiences of boys and girls and at the same time to determine at what grade level, or levels, those experiences should be provided. In this way, the committee believed, it could chart a health program that would be continuous, coordinated, and, above all, important to young people.

To aid in the study, the committee developed the following basic assumptions:

1. Learning experiences, in order to be meaningful to children, must be related to their interests and concerns.
2. Health instruction can be functional only insofar as it provides solutions to the real problems of boys and girls.

¹ *Health Interests of Children* (Denver, Colorado: Public Schools, 1947).

The average number of absent days per teacher is 4.9 per year. No count of the number of days lost by the 48,000,000 pupils attending the public schools is available. The upper respiratory infection, the common cold, causes the greatest loss of time from school and work.

Teachers should be alerted to the fact that many of the important communicable diseases in the child begin with symptoms of the "common cold." Sometimes these symptoms may be an early manifestation of a more serious disease such as scarlet fever, streptococcus infection, measles, or poliomyelitis. Influenza, with its wave-like recurrences of epidemics, is a continuous threat to the school population. There is a constant awareness of the school's important role in the discovery, control, and prevention of respiratory infections.

The children of today generally benefit from good environmental sanitation in the home, the school, and community. Advances in medicine and nutrition have improved the health status of youth. Further health progress will depend on the control of accidents and chronic diseases. It is imperative that the schools help this worthy cause by fostering good health and proper safety habits. More emphasis can be placed upon rehabilitation and caring for children with physical and mental impairments.

HEALTH OBJECTIVES

The main health objective is to protect and improve the physical, mental, and social health of school children, by means of the following general procedures:

1. Provide good health instruction for children so that they may conserve and improve their own health, to the end that they shall be able to secure the vigor and vitality so fundamental for future happiness and usefulness.
2. Promote satisfactory health understandings, attitudes, and behavior so that pupils today may become healthy parents and healthy citizens of their communities tomorrow.
3. Develop desirable health habits and attitudes by means of a motivational health instruction program.
4. Encourage the maintenance of a wholesome and healthful school environment so that it may be a healthy and safe place in which to live.

Specific health practices, knowledges, and attitudes are closely related to the various areas in health instruction such as nutrition, physical exercise, personal health, community health, first aid and safety, communicable disease control, health services, and mental health. In each grade, the teacher should use the most effective plan for teaching the various age groups. The teacher's skill is necessary in directing the attitudes of the pupil toward his own personal health. Habits and skills usually ob-

TABLE 4.1 (cont.)

Areas		Health Needs		Health Interests	Grade Level (Ages 5,6,7,8)
Selection and Composition of Foods	Choosing foods wisely		Learning how to relax		Choosing foods wisely (2)
	Knowing some of the basic food requirements of the body		Getting right amount of sleep		
Rest and Relaxation	Learning how to relax Getting right amount of sleep Resting through change of activity		Getting right amount of sleep		Learning how to relax (K,1,2,3) Getting right amount of sleep (K,1,2,3)
Personal Appearance	Developing habits of good posture Wearing suitable clothing		Developing habits of good posture (K,1,2,3) Wearing suitable clothing (K,1,2,3)		Developing habits of good posture (K,1,2,3) Wearing suitable clothing (K,1,2,3)
Personality Development	Developing confidence and poise Getting along with own group Getting along with adults		Developing self confidence and poise (K,1,2,3) Getting along with own group (K,1,2,3) Getting along with adults (K,1,2,3) Learning manners (K,1,2,3)		Developing self confidence and poise (K,1,2,3) Getting along with own group (K,1,2,3) Getting along with adults (K,1,2,3) Learning manners (K,1,2,3)
Social Health	Developing wholesome attitudes toward sex curiosities as they arise		Developing wholesome attitudes toward sex curiosities as they arise (K,1,2,3)		Developing wholesome attitudes toward sex curiosities as they arise (K,1,2,3)
Safety	Developing habits of safety on way to and from school, at play, at home		Developing habits of safety on way to and from school, at play, at home		Developing habits of safety on way to and from school, at play, at home (K,1,2,3)
Vocations	Appreciating work of health helpers in the community		Appreciating work of health helpers in the community		Appreciating work of health helpers in the community (2)

TABLE 4.1
Denver Schools' Summary Chart of Health Interests and Needs

Areas	Health Needs		Health Interests		Grade Level (Ages 5,6,7,8)	
	Developing habits of cleanliness	Developing habits of personal cleanliness	Developing habits of personal cleanliness	Developing habits of personal cleanliness	Developing habits of personal cleanliness (K,1,2,3)	Developing habits of personal cleanliness (K,1,2,3)
Keeping Fit	Developing habits of cleanliness	Developing habits of personal cleanliness	Developing habits of personal cleanliness	Developing habits of personal cleanliness	Caring for eyes (2,3)	Caring for eyes (2,3)
	Caring for eyes, ears, nose	Developing proper attitudes toward physical examination			Developing proper attitudes toward physical examination (K,1,2,3)	Developing proper attitudes toward physical examination (K,1,2,3)
Group Health	Participating in the control of contagious diseases	Developing habits of sanitary practice	Developing habits of sanitary practice	Developing habits of sanitary practice	Participating in the control of contagious diseases (K,1,2,3)	Participating in the control of contagious diseases (K,1,2,3)
	Developing habits of sanitary practice				Developing habits of sanitary practice (K,1,2,3)	Developing habits of sanitary practice (K,1,2,3)
Protection from Disease	Preventing colds, skin diseases	Developing proper attitudes toward vaccination	Developing proper attitudes toward vaccination	Developing proper attitudes toward vaccination	Developing proper attitudes toward vaccination (K,1,2,3)	Developing proper attitudes toward vaccination (K,1,2,3)
	Developing proper attitudes toward vaccination				Preventing colds, skin disease (K,1,2,3)	Preventing colds, skin disease (K,1,2,3)
Dental Health	Caring for teeth and gums	Developing proper attitudes toward dental examination	Caring for teeth and gums	Caring for teeth and gums	Caring for teeth and gums (K,1,2,3)	Caring for teeth and gums (K,1,2,3)
	Adjusting to the loss of baby teeth		Adjusting to the loss of baby teeth	Adjusting to the loss of baby teeth	Adjusting to the loss of baby teeth (K,1,2)	Adjusting to the loss of baby teeth (K,1,2)
	Developing proper attitudes toward dental examination		Developing proper attitudes toward dental examination	Developing proper attitudes toward dental examination	Developing proper attitudes toward dental examination (K,1,2,3)	Developing proper attitudes toward dental examination (K,1,2,3)
Good Eating Habits	Observing a regular time for eating	Observing a regular time for eating	Observing a regular time for eating	Observing a regular time for eating	Observing a regular time for eating (K,1,2,3)	Observing a regular time for eating (K,1,2,3)
	Having sufficient rest and quiet to aid digestion		Observing cleanliness in eating	Observing cleanliness in eating	Chewing and eating slowly (K,1,2,3)	Chewing and eating slowly (K,1,2,3)
	Chewing and eating slowly				Having sufficient rest and quiet to aid digestion (K,1,2,3)	Having sufficient rest and quiet to aid digestion (K,1,2,3)
					Observing cleanliness in eating (K,1,2,3)	Observing cleanliness in eating (K,1,2,3)

PRIMARY GRADES. The primary teachers in the Cincinnati schools help to maintain a healthful school environment, plan and carry on an effective program of health instruction, and secure parental cooperation in reaching the objectives of the health program.

The health instruction program is developed around six basic health needs, namely, nutrition; sleep, rest, and relaxation; outdoor play and recreation; exercise; freedom from communicable diseases and remediable defects; and avoidance of accidents. Instruction is directed toward securing specific habits, attitudes, and understandings related to these basic health needs of children.

INTERMEDIATE GRADES. According to the Cincinnati plan, a pupil should leave the intermediate grades free from remediable physical defects and poor health habits. Good health habits are as important as making a picture or painting.

In grades four, five, and six, health instruction builds upon the health understandings, habits, and attitudes developed in the primary grades. Continued emphasis is placed upon cleanliness, rest, play, exercise, nutrition, and social and emotional development. Areas especially stressed in grade four are understanding the body, nutrition, and personal hygiene. In grade five, the areas are first aid and safety, choice and use of health services and products, and community health resources. In grade six, the course is based on health problems, recreation, body mechanics, and personal-social relations.

Health Misconceptions

Sutton⁹ has stated that health misconceptions are common among children and youth, and that, used as a basis for decisions influencing one's health, these misconceptions pose a potentially serious threat. The teacher, if aware of these misconceptions, should utilize this information in planning effective learning experiences in health education.

Sutton summarized his report with excerpts illustrating the misconceptions of pupils in the fifth and sixth grades, as follows: Nearly three of four believed that "taking vitamin pills will guarantee you good health"; two out of three believed that "most fat people are very healthy"; 19 of 20 believed that "the use of tooth powders or pastes will always cure a person's bad breath"; nearly one out of six believed that "it is all right to use sleeping pills without a doctor's advice"; two out of five believed that "mental illness cannot be helped by any treatment"; four out of five thought that "there are certain medicines that will prevent the common cold"; one out of three stated that "tuberculosis is a shameful disease to have"; two out of three believed that "all persons should use nose drops and mouth washes daily when they have a cold."

⁹ Wilfred C. Sutton, "Misconceptions about Health among Children and Youth," *Journal of School Health*, 32, No. 9 (November 1962), 347.

3. Developmental characteristics affect the interests and concerns of children.

4. Health needs of children give leads for selecting experiences in a health program.

5. Parents, teachers, experts in the field of health education, and children themselves are resources through which the health interests, concerns, and needs of children can be discovered.

6. Recognized authorities in the field of child growth and development are acceptable as sources of information for purposes of the study.

7. A basic knowledge of interests, concerns, needs, and developmental characteristics of children at various grade levels is essential information for building a functional health program.

To carry out the interest survey, the Denver committee obtained information from three sources, namely, the parents, the teachers, and the children themselves. A summary of the results of this survey for the kindergarten and first three grades is presented in Table 4.1. The needs and interests expressed for all other grades in school are contained in the original report.

The Denver study showed that the greatest health interest at all grades was physical fitness. Interests of both boys and girls in the choice of food, care of teeth, and safety rated high in the fourth and fifth grades. Young children were interested in activities for which they had immediate use. At the sixth grade, considerable interest was indicated in sex differences; as a result, special health units on this subject were developed for this grade.

OTHER HEALTH CURRICULUM SOURCES

A number of other methods for determining the content of health-instruction courses in the elementary schools have been utilized. Several of these will be described below.

Cincinnati Course

Streit⁸ has reported that the Cincinnati Board of Education has approved a health instruction program for all public school grades. The reason for this decision was that such instruction should occur at all grade levels because youth has particular needs at each stage of growth and development.

Streit indicated, as have others throughout the country, that the classroom teacher is the key person in the school health program. Because of her strategic position and her constant daily contacts with the pupils, it is necessary that she assume definite responsibilities in planning and administering the total health education program of the school.

⁸W. K. Streit, "Health Education from Kindergarten through High School," *Journal of School Health*, 24, No. 9 (November 1954), 235.

The results of the study indicated that the parents expected the school to accept some responsibility for the health education of their children. Parents and teachers agreed that instruction pertaining to sex education, tobacco, alcohol, and drugs was appropriate. Some differences were found between the beliefs of parents of children in the elementary grades and the beliefs of parents of children in the eighth grade. The eighth-grade parents were concerned with the teaching of sex education, the effects of alcohol and tobacco, patent medicines, and human reproduction.

Few would agree that parent-community opinion should be the sole determinant of the aims and objectives of the local school health curriculum. Conversely, equally few would deny consideration of the desires of the local community in planning the health education program. However, a thorough analysis of the expectations of parents, teachers, and pupils certainly should provide some direction in building the health education curriculums.

HEALTH INSTRUCTION SEQUENCE

Rash¹² identified three schools of thought concerning the sequence of health instruction in the schools. These are:

1. The *continuous plan*, which emphasizes a continuous emphasis on certain important health problems. The proponents of this plan argue that there is so much to teach and so little time in which to teach health that continuous emphasis must be placed on the most important health problems. They indicate that repeated exercise must be placed on these special areas in order for them to become habit-forming.

2. The *psychological approach* places emphasis on a particular health problem when the opportunity offers itself. Proponents of this plan argue that readiness is a vital factor in successful teaching, or in learning, and that the readiness which is the result of an actual problem or situation provides the ideal opportunity for successful teaching.

3. The *cycle plan* provides for repeated intensive study of the same health problems every three or four years. Under this plan, phases of health instruction presented are arranged in sequence over a period of, say, three years, and then are repeated. The proponents of this plan maintain that it permits adequate emphasis on the major health problem areas on the basis of changing needs, interests, and abilities of the growing child without danger of undesirable repetition.

Certain weaknesses of these plans are suggested as follows: The *continuous plan* sometimes encourages repetition, and sometimes teachers fail to discriminate between the essential and the nonessential aspects of health education. The *psychological approach* occasionally fails to pro-

¹² J. Keogh Rash, "Scheduling and Sequence of Health Instruction—Grades 1-12," *Journal of School Health*, 24, No. 5 (May 1954), 137.

Many of these misconceptions among school children illustrate the basis upon which many children and youth are making decisions about their health. The classroom teacher should substitute scientific, accurate information for these misconceptions as a basis for the making of personal health decisions.

Byrd's Proposal

The determination of health interests and needs cannot be left entirely to student discretion, for an inadequate expression of interests may be the result. The pupil may be entirely unaware of future and even current health needs, and his interests may be largely immature. Byrd has published many leading articles on health problems and developments in medical, public health, and allied scientific journals. Such published materials should have value for curricular content in health education in the public schools.

Byrd¹⁰ has proposed 21 major health-problem areas, with 300 subdivisions consisting of specific health problems of varying significance. The 21 main areas are as follows: (1) health as a social accomplishment, (2) health as a social problem, (3) nutrition and health, (4) excretion and health, (5) exercise and body mechanics, (6) fatigue and rest, (7) mental health and disease, (8) heredity and eugenics, (9) infection and immunity, (10) chronic and degenerative diseases, (11) habit-forming substances, (12) the care of special senses, (13) safety, (14) health and the physical environment, (15) scientific health services and facilities, (16) family health, (17) school health, (18) occupational health, (19) community health services, (20) international health, and (21) trends and possibilities.

A Kansas Community Survey

On occasion, authorities in health education have evaluated the role of the school in health education by exploring their community's views of this responsibility. Breazier¹¹ describes such an evaluation in a city of 33,000 population in Kansas. A questionnaire was prepared which asked the following questions: "Should the school provide a program of health education that would teach children and youth the facts and practices, appropriate to their age and grade, that relate to each of fifteen areas of health?" The 15 areas were then presented. Copies of this questionnaire were sent to all parents (2170) who had children in the public schools from kindergarten through the sixth grade. These same questions were asked of the teachers in the school system.

¹⁰ Oliver E. Byrd, "Health Problems of Significance for Course and Curriculum Construction," *Research Quarterly*, 21, No. 1 (March 1950), 3.

¹¹ Eldon E. Breazier, "Community Expectations and School Health Curriculums," *Journal of School Health*, 31, No. 1 (January 1961), 14.

room teacher should be constantly alert to adapt health education materials to the interests, needs, and capabilities of her pupils.

In general, health content for the primary grades may be divided into three broad categories: safety education, personal health, and community health. Suggestions for the content material to be presented within each of these categories follows.

Safety Education

Today, accidents create the greatest child-health problem. The community and school have learned to immunize children against disease but not against accidents. Many of these accidents occur when children are under stress. The teacher should look for the "emotional component" in the prevention of accidents. She should understand what is behind the human failure to avoid accidents. Good mental health practices should be present throughout all teaching experiences in the primary grades so that tensions do not develop and become contributory causes of accidents.

The safety education topics to be included in the health instruction program should be based upon the needs of daily living in home, school, and community situations. *Suggested outcomes and activities for these situations, as applied to the primary grades, are listed below.*

Home Safety

SUGGESTED OUTCOMES. The suggested outcomes related to the home safety phase of health instruction for the primary grades follow.

1. Development of habits of picking up toys and other objects and placing them in their proper places.
2. Avoidance of the use of matches unless under adult supervision.
3. Realization of the need to be calm if injured.
4. Learning to be cautious in handling animals as pets.
5. Understanding of the precautions that are necessary for safe participation in the community's recreation program, especially as related to swimming, boating, and other aquatic activities.
6. Knowledge of survival techniques that are necessary when one is lost.
7. Ability to bear pain bravely and not to be afraid when injured.
8. Recognition that the doctor and dentist are their friends.
9. Recognition that some plants are harmful.
10. Understanding precautionary measures to be taken with the household ingredients for laundry, pesticides, and so forth.¹²

¹² *Handbook for Health Instruction in Oregon Elementary Schools* (Salem, Oreg.: State Education Department, 1951), p. 17.

vide the assurance that each child will have an opportunity to develop those desirable habits, attitudes, and knowledges which experience has shown to be essential. The *cycle plan* at times does not take full advantage of the experiences and situations that may arise unexpectedly.

The type of plan adopted depends on each local school and how the total elementary school curriculum is organized. Basically, success depends on the teacher who is in charge of the health instruction of her pupils. Utilization of the elements of all three plans may be most desirable. There should be sufficient flexibility in the health instruction approach to allow for a continuous emphasis when necessary, using the psychological approach when desirable, and employing the cycle plan to insure a good and well coordinated health program over a period of years. Much depends on the local teachers and administrators knowing how to use the best method to fit the needs of their local school situation. Someone in each school building should be designated as a health coordinator to see that the program is well organized and administered.

A classroom teacher can also check the personal health habits of her pupils in her effort to meet their health needs. Another technique is to analyze and review the health histories and the health examination data of the pupils in the class. The teacher can secure the help of the nurse or doctor in the interpretation of such data for use in health instruction.

HEALTH CONTENT FOR PRIMARY GRADES

The role of the elementary teacher in the health instruction program in grades one, two, and three is one of helping the pupils to understand and practice good health habits and to acquire and maintain desirable health attitudes. There is more to health teaching than just knowing about the health facts pertaining to sleep, exercise, and diet. The teacher should understand the physical, physiological, neuromuscular, and behavioral characteristics of her pupils; review Chapter 2 for a comprehensive grasp of these characteristics. A wholesome attitude of the teacher, founded on an understanding of the nature of children and their individual needs, is a far sounder approach to health teaching than is an attempt to develop such attitudes through fear of consequences or of censure. Frequently, health content materials are supplied by a state department of education, or these sources of study are developed by a local health education committee. Such formal course plans should be considered as only a beginning in paving the way for the development of wholesome habits of children. Primary-grade children learn by doing, through health experiences that they have at school and in the home. Although the areas to be included in health instruction may be designated in the state syllabus or by the local health committee, the class-

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3. Realization of the need to be calm if injured.
4. Learning to be cautious in handling animals as pets.
5. Understanding of the precautions that are necessary for safe participation in the community's recreation program, especially as related to swimming, boating, and other aquatic activities.
6. Knowledge of survival techniques that are necessary when one is lost.
7. Ability to bear pain bravely and not to be afraid when injured.
8. Recognition that the doctor and dentist are their friends.
9. Recognition that some plants are harmful.
10. Understanding precautionary measures to be taken with the household ingredients for laundry, pesticides, and so forth.¹³

¹³ *Handbook for Health Instruction in Oregon Elementary Schools* (Salem, Oreg: State Education Department, 1951), p. 17.

vide the assurance that each child will have an opportunity to develop those desirable habits, attitudes, and knowledges which experience has shown to be essential. The *cycle plan* at times does not take full advantage of the experiences and situations that may arise unexpectedly.

The type of plan adopted depends on each local school and how the total elementary school curriculum is organized. Basically, success depends on the teacher who is in charge of the health instruction of her pupils. Utilization of the elements of all three plans may be most desirable. There should be sufficient flexibility in the health instruction approach to allow for a continuous emphasis when necessary, using the psychological approach when desirable, and employing the cycle plan to insure a good and well coordinated health program over a period of years. Much depends on the local teachers and administrators knowing how to use the best method to fit the needs of their local school situation. Someone in each school building should be designated as a health coordinator to see that the program is well organized and administered.

A classroom teacher can also check the personal health habits of her pupils in her effort to meet their health needs. Another technique is to analyze and review the health histories and the health examination data of the pupils in the class. The teacher can secure the help of the nurse or doctor in the interpretation of such data for use in health instruction.

HEALTH CONTENT FOR PRIMARY GRADES

The role of the elementary teacher in the health instruction program in grades one, two, and three is one of helping the pupils to understand and practice good health habits and to acquire and maintain desirable health attitudes. There is more to health teaching than just knowing about the health facts pertaining to sleep, exercise, and diet. The teacher should understand the physical, physiological, neuromuscular, and behavioral characteristics of her pupils; review Chapter 2 for a comprehensive grasp of these characteristics. A wholesome attitude of the teacher, founded on an understanding of the nature of children and their individual needs, is a far sounder approach to health teaching than is an attempt to develop such attitudes through fear of consequences or of censure. Frequently, health content materials are supplied by a state department of education, or these sources of study are developed by a local health education committee. Such formal course plans should be considered as only a beginning in paving the way for the development of wholesome habits of children. Primary-grade children learn by doing, through health experiences that they have at school and in the home. Although the areas to be included in health instruction may be designated in the state syllabus or by the local health committee, the class-

SUGGESTED ACTIVITIES. Suggested activities for the home safety phase of health instruction are given below.

1. Discuss and dramatize what can happen when toys and tools are left out of place.
2. Use bulletin boards and posters.
3. Read and tell stories and have the children relate stories of dangers of play with animals.
4. Dramatize what the children would do in case they were lost.
5. Visit a fire department.
6. Use visual aids, such as movies, slides, and so forth, to demonstrate safety practices in the home.
7. Discuss the responsibilities of school bus drivers.

School Safety

SUGGESTED OUTCOMES. The outcomes suggested for school safety instruction in the primary grades follow.

1. Playing without recklessness or exhibitionism.
2. Playing cooperatively to prevent accidents and injuries.
3. Understanding fire and air-raid drills, and learning to pass from the room quickly and safely.
4. Knowledge of safe ways of entering and leaving the school building.
5. Identification of safe places to play.
6. Understanding reasons why children should not accept rides with strangers.
7. Observing school safety precautions without feeling fear.
8. Knowing where to find an adult if injured.
9. Realization that minor cuts, blisters, and so forth, should have immediate attention to prevent infection.

SUGGESTED ACTIVITIES. The suggested activities for utilization in the school safety phase of health instruction are given below.

1. Tour the school buildings and grounds, discussing safe and unsafe places to play.
2. Demonstrate use of playground equipment and going up and down stairs.
3. Dramatize safe and unsafe ways to play.
4. Use bulletin board and posters.
5. Take home fire prevention chart and return it with home hazards noted and appropriate corrections indicated.
6. Make traffic lanes and play traffic officer in the schoolroom.
7. *Dramatize going to the right person in case of an injury.*
8. Chart the safest way to go to and from school.

Community Safety

SUGGESTED OUTCOMES. For the community safety phase of health instruction for the primary grades, the outcomes suggested follow.

SUGGESTED ACTIVITIES. The suggested activities for utilization in the nutrition phase of health instruction follow.

1. Discuss cleanliness and good manners to be observed in the school *lunchroom*.
2. Cut out pictures and arrange them to include the basic four foods.
3. Discuss breakfast and school lunches; arrange all meals with cut-outs.
4. Keep height and weight charts for each child.
5. *Discuss the importance of a hot lunch.*
6. Visit a dairy or a dairy farm.
7. Visit a market or a truck farm.

Personal Cleanliness

SUGGESTED OUTCOMES. For the personal cleanliness phase of health instruction for the primary grades, the outcomes suggested are:

1. Knowing how to keep hands, face, neck, ears, and teeth clean.
2. Using only one's own toothbrush, and brushing teeth in approved manner at least twice a day.
3. *Knowing how to bathe and dry oneself properly.*
4. Washing hands before eating and after going to the toilet.
5. Using individual washcloths, towels, comb, and brush.
6. Brushing hair every day.
7. Using lavatories and toilets properly and using drinking fountains carefully.

8. Assuming individual responsibility for the cleanliness and care of comb, brush, towels, soap, washbowls, bathtubs, and drinking fountains.

SUGGESTED ACTIVITIES. The suggested activities for personal cleanliness instruction are presented below.

1. Use the shower in school after physical activities.
2. Discuss the dentist as a friend and the reasons for a regular visit to the dentist.
3. Tour your building to find the correct way of using drinking fountains.
4. Demonstrate the correct way to use the toothbrush.
5. Discuss the rules of cleanliness.

Nature of the Body

SUGGESTED OUTCOMES. The outcomes suggested in studying the nature of the body for primary school children follow.

1. Knowing that the body works for us, and that we must therefore assume more responsibility for personal habits.
2. *Cooperating with parents in consulting an eye specialist when necessary.*

3. Knowing why hearing and vision tests are given in school; cooperating during tests.

4. Learning that each individual has his own rate of growth.

5. Learning and using correct vocabulary for expressing personal needs.

6. Realizing that foreign and polluted objects should be kept away from eyes, ears, nose, and mouth.

7. Knowing the reasons why one should read and work in adequate light.

SUGGESTED ACTIVITIES. The suggested activities to be utilized in studying the nature of the body are given here.

1. Make a game or contest for learning names of the parts of the body.

2. Make posters showing what the body needs.

3. Keep height and weight charts.

4. Show growth charts illustrating how the body grows over the years.

5. Explain why there are individual differences in the growth of boys and girls.

6. Discuss food and its relationship to growth.

7. Discuss some recreational activities that help to promote the growth of children.

Exercise, Rest, and Sleep

SUGGESTED OUTCOMES. In presenting exercise, rest, and sleep as a phase of health instruction for the primary grades, the suggested outcomes are the following.

1. Understanding the necessity for a good night's rest.

2. Knowing the relationship between the necessary sleep and growth.

3. Participation in adequate exercise and physical activity every day. Check with the requirements recommended by the President's Council on Physical Fitness. (Recheck the section on Physical Fitness in Chapter 1.)

4. Development of a desire to cooperate with parents in going to bed on time, and to arise in the morning on time and in a cheerful mood.

5. Learning the art of relaxation, especially over the weekend and during holidays.

6. Starting to understand the foundations of good posture. The pupil should know that he will feel better mentally if he stands straight.

SUGGESTED ACTIVITIES. The suggested activities to be utilized in studying exercise, rest, and sleep are given below.

1. Classroom teachers should develop a good physical education program for their pupils and include such activities as running, jumping, skipping rope, and climbing. Good equipment for the playground is necessary for such a program.

2. Teachers should check desks and seats of their classrooms to see that the pupils' feet are flat on the floor.
3. Demonstrate good posture and correct walking in the class.
4. Go through some exercises which emphasize strengthening the muscles for good posture.
5. Practice fundamental tumbling stunts, such as forward rolls and cartwheels, to develop the necessary coordination for the primary grades.

Community Health

The third category of health instruction in the primary grades is community health. Quite obviously, community health problems frequently are intimately related to the personal health of elementary school pupils. Children should develop an understanding of community health problems and a desire to cooperate with community health regulations. Pupils should also be aware that, in such booming states as California, Arizona, and Florida, community health problems are magnified, a much greater community effort is necessary in solving these problems for the health benefits of all citizens.¹⁴

SUGGESTED OUTCOMES. The suggested outcomes for the community health instruction for the primary grades are given here.

1. Understanding the individual's responsibility for development of personal and community health, and their relationship to each other.
2. Development of a wholesome attitude toward the immunization program suggested by their local community and their particular school.
3. Knowledge of the personal health habits appropriate when coughing or sneezing.
4. Understanding the manner by which food and milk are protected by the community.
5. Realization of the values of fluoridation in maintaining good teeth.
6. Knowledge of how food is protected to make it safe.
7. Knowledge of the importance of visiting the dentist and brushing the teeth, and how good food helps to maintain good teeth.
8. Understanding the necessity for visiting doctors and clinics to help to maintain health.
9. Development of a wholesome attitude toward the doctor and the dentist, including the realization that each family should have a family doctor and dentist.
10. Realization that the health record card for each pupil helps him to check on his health throughout the elementary school grades and beyond.
11. Understanding that local communities must protect the citizens through good water supply and sewage and garbage disposal methods.

¹⁴ Jack Smolensky and Franklin B. Haar, *Principles of Community Health* (Philadelphia, Pa.: W. B. Saunders Company, 1961), p. 1.

12. Realization that a community should provide recreational activities for the people to help promote their mental and physical health. Family recreation in the homes and community is encouraged.

SUGGESTED ACTIVITIES.

1. Make scrapbooks of the recreational activities that are available in a community. (These may also include recreational activities that are needed but not provided at the present time.)

2. Have the children visit a food processing plant, milk depot, health department, police department, first-aid station, civil defense station, and the like.

3. Make safety posters and display them on bulletin board or in hallways.

4. Make immunization-schedule charts and display them on the bulletin board.

5. Display health or morbidity statistics of your school or classroom. (Why are students absent over the school year? What illnesses are most prevalent? How can they be prevented?)

6. Have the pupils write "safety slogans." (Check with the National Safety Council for additional suggestions. The National Commission on Safety, National Education Association, Washington, D. C. has materials available on safety education for teachers and pupils.)

7. Invite safety officials from your community to talk and demonstrate safety procedures that are used in your community. (If not available locally, your state may have such officials willing to help the teacher.)

8. Develop responsibility for the performance of home duties.

9. Chart the safest routes to and from school.

10. Invite the school or public health nurse to talk about personal health, first aid, and immunizations that are necessary to prevent disease.

HEALTH CONTENT FOR INTERMEDIATE GRADES

The classroom teachers of grades four, five, and six should be acquainted with the characteristics and growth changes of their children and should have an understanding of the nature, extent, and significance of their individual differences. Some of these children, especially girls in grade six and some early-maturers in grade five, will be advancing into adolescence. The teacher may wish to review Chapter 2 of this book from time to time in order to keep these growth characteristics and changes clearly in mind.

Classroom teachers are in a position to observe any unusual behavior or physical signs that may need immediate attention or help from a professional health expert, such as a nurse, dentist, or physician. There should be close cooperation between the teacher, administrator, and the home in these intermediate grades. Teachers should consult their local

health instruction guides if available. If none are available, perhaps their state department of education has developed such guides for use by teachers. Many states have developed good courses of study in health instruction, as have individual city and county school systems throughout the United States.

The National Education Association, through its affiliate organization, The American Association for Health, Physical Education and Recreation, has aided in promoting and developing good health education courses of study. Many voluntary and public health organizations, as well as the medical and dental professions, have supported and contributed to the development of principles, practices, courses of study, and consultation services in health instruction for the schools. These may be obtained and used by classroom teachers.

In addition to formal classroom health instruction in the intermediate grades, health content may be effectively integrated into other elementary school subjects. The social studies and science areas can also emphasize some health instruction, as can other academic subjects. Physical education activities offer an excellent laboratory for stressing healthful living.

As was true for the primary grades, the health instruction program presented here consists of suggestions, so it should be considered tentative in nature. The classroom teacher should emphasize or add content as she sees fit to meet the needs and interests of her pupils and to adjust to her local situation.

Fourth Grade

Body Care

SUGGESTED OUTCOMES. The suggested outcomes for the body care phase of health instruction for grade four are given below.

1. Understanding the value of rest and sleep to the body.
2. Recognition of symptoms of fatigue in children.
3. Knowledge of the physiologic effects of harmful ingredients in teeth and body.
4. Knowledge of rules for personal grooming.
5. Realization of the causes of eyestrain.
6. Realization of the causes of earaches.
7. Recognition of the values of good sight and hearing.
8. Understanding the importance of good posture.
9. Acceptance of the need for good medical and dental advice and the reasons for visiting these specialists.
10. Understanding the care of the scalp and skin and the need for regular bathing.

SUGGESTED ACTIVITIES. Suggested activities for the body care phase of health instruction are given here.

1. Develop a chart showing the basic four groups of food required for good nutrition.
2. Explain how germs are carried and cause disease.
3. Discuss the values of personal grooming.
4. Discuss the effects of good emotional health at mealtimes.
5. Discuss the importance of good family health and its relation to individual health.
6. Invite the school or public health nurse to explain the values of a health examination, the immunization program, and good posture practices.
7. Discuss the importance of exercise and how it affects health.
8. Discuss the functions of the ears and the eyes and how the pupils should care for them and protect them.
9. Discuss the necessity of getting enough sleep and rest and how these affect health.

Safety Education

SUGGESTED OUTCOMES. The outcomes suggested for safety instruction in the fourth grade follow.

1. Knowledge of safety practices with reference to stairs, playgrounds, classrooms, and hallways.
2. Acceptance of good pedestrian practices, including observance of traffic lights in crossing streets.
3. Cooperation with the school safety patrol.
4. Recognition of the values of the activities of the local community's safety organizations.
5. Participation in playground activities without getting injured.
6. Recognition of the danger of household poisons and poison ivy and other harmful plants.
7. Proper performance of fire drills in school and knowledge of appropriate exits from the school building in case of fire.
8. Correct performance during civil defense drills.

SUGGESTED ACTIVITIES. The suggested fourth-grade activities for utilization in the safety education phase of health instruction are given below.

1. Practice fire drills correctly under supervision of the teacher.
2. Practice correct civil defense procedures as set up by the state or local authorities.
3. Invite a fireman to explain the fire hazards around the home and how to prevent fires by checking wiring, and so forth.
4. Invite a policeman to explain the traffic laws in the community.
5. Demonstrate bicycle safety.
6. Make a survey of the gymnasiums, playgrounds, and so forth, to check any hazards which may cause unnecessary accidents. (Discuss preventive aspects after the check.)

7. Simulate traffic and bicycle problems in the classroom.
8. Discuss first-aid techniques.
9. Check first-aid and safety materials available from the Red Cross and National Safety Council. (Use these for display materials on the safety bulletin board.)
10. Organize a classroom safety council and elect officers. Plan a safety program for your class.

Fifth Grade

Nutrition

SUGGESTED OUTCOMES. For the nutrition phase of health instruction at the fifth-grade level, the outcomes suggested follow.

1. Knowledge of the importance of a balanced diet.
2. Understanding the importance of vitamins and their function in the growth of children.
3. Knowledge of the four basic food groups: dairy products, meats, vegetables and fruits, and breads and cereals.
4. Recognition of dietary deficiencies in one's own diet.
5. Understanding ways by which early settlers obtained their food and the type of diet they considered appropriate for themselves.
6. Recognition of ways by which the family can work together to provide good nutrition.
7. Realization that restaurants must keep their foods clean and their establishments sanitary because of public health regulations.
8. Recognition that school lunchrooms conform to proper sanitary standards for the health protection of pupils.

SUGGESTED ACTIVITIES. The suggested activities for fifth-grade nutrition instruction are presented below.

1. Relate stories about nutrition, the discovery of the various vitamins, and so forth.
2. Make a cardboard model to illustrate the four basic foods: dairy products, meats, vegetables and fruits, and breads and cereals. (Check with the local or state dairy council for food charts.)
3. Make and display a miniature dining room from cardboard boxes.
4. Evaluate lunchroom facilities and practices and make recommendations for improvement.
5. Secure some white mice and conduct simple nutrition experiments. (Let the pupils do the work and gather the statistics.)
6. Make a notebook, indicating with cutouts the proper diet for the various meals during a day.
7. Consult the local dairy council for guest speakers.
8. If a local college or university is situated close to your school, contact the health education department for guest speakers or available suggestions for activities in the classroom.

9. Contact your local health department for aids in supplementing your class activities.

10. Contact your local school audio-visual department for film slides or motion pictures that are available for the fifth grade.

11. Visit a local bakery.

Safety Education

SUGGESTED OUTCOMES. The suggested outcomes for safety instruction in the fifth grade follow.

1. Cooperation with the hall patrols to help prevent school accidents.

2. Realization of enjoyment from participation in recreational activities.

3. Recognition of ways by which injuries may be prevented around the home and by which the family can reduce hazards around the yard and in the house.

4. Knowledge of safe places to swim and skate.

5. Ability to apply safety precautions when using tools, such as hammers, saws, and so forth.

6. Recognition of safe ways to handle pets in the home.

7. Ability to prevent and extinguish fires around the yard, barn, shed, and house.

8. Knowledge of the first-aid treatment of common wounds and injuries and a source of assistance that can be secured immediately.

9. Knowledge of the name and address of his family doctor.

10. Knowledge of the address and telephone number of his home for use in case of an accident.

11. Acceptance of the safety rules of his particular school.

SUGGESTED ACTIVITIES. Suggested activities for fifth-grade safety instruction follow.

1. Have a classroom committee on safety keep a tabulation of accidents that occur to the pupils participating in playground activities, in the halls, in the classroom, and so forth. Discuss at the end of the term how these could have been prevented.

2. Take a field trip to a fire station, and observe the organization of an efficient fire-fighting team.

3. Keep records of accidents that occur in the homes of pupils in the class. (How many days are lost, and what medical treatment was administered?)

4. Conduct simulated first-aid care of wounds, indicating ways to avoid infection.

5. Study the hazards confronting the classroom group, and plan a course of preventive action.

6. Visit various organizations in the community that contribute to safety education.

7. Dramatize the use of the telephone in case of accident emergencies.

8. Learn the fundamental skills of tumbling in order to develop the ability to fall correctly.
9. Study the traffic regulations of your state, of your community, and of neighboring states.
10. Survey the playground for accident hazards. How would you correct them?
11. Discuss accidents that happen in sports. Which are the safer sports? Why?
12. Collect newspaper pictures over a month or two with reference to accidents in a community. Display these on the bulletin board.

Sixth Grade

Physical Exercise

SUGGESTED OUTCOMES. The outcomes suggested for the physical exercise phase of health instruction at the sixth-grade level are presented below.

1. *Development of a desire for physical fitness and understanding of its relationship to good health.*
2. *Knowledge of the effects of exercise on the human body; an understanding of some fundamentals of anatomy and physiology as they relate to circulation, strength, skill, coordination, and other bodily processes.*
3. *Realization that exercise is essential for relaxation and sleep.*
4. *Understanding of the principles related to body fatigue.*
5. *Understanding of the reasons for a daily physical education program and the reasons for continuing this program throughout life.*
6. *Understanding of the relationship of athletics to an educational program.*
7. *Knowledge of the fundamentals of good posture as it relates to good health.*
8. *Recognition of the physical activities that have a "carry-over" value for later life.*
9. *Understanding of the physical activities that families as a unit can enjoy.*

SUGGESTED ACTIVITIES. Suggested activities for realizing the values of physical exercise follow.

1. Have the pupils keep individual height and weight charts.
2. Discuss warming-up exercises before participating in physical-education activities.
3. Discuss why athletes warm up before starting a game or track event.
4. Describe the use of different types of exercises for the development of strength, agility, and coordination.
5. Invite an athlete to class to demonstrate how he keeps fit through training.

Community Health

SUGGESTED OUTCOMES.

1. Recognition of contributions of the United States Public Health Service in assisting the states and communities to provide better sanitation and community health.
2. Realization of the contributions of the medical and dental professions toward improving the health of the community.
3. Understanding of the importance of the local hospital and of how it functions in the community life.
4. Recognition of the importance of requiring laws in the state pertaining to restaurants, motels, hotels, and food handlers.
5. Appreciation of the importance of a good immunization program to keep the school and the community healthy.
6. Realization of the problem related to communicable disease prevention in the school and community.
7. Understanding ways by which disease is spread from one person to another.

SUGGESTED ACTIVITIES. The suggested activities for sixth-grade community health instruction follow.

1. Visit a local restaurant and study the sanitary methods employed to keep the food safe and refrigerated, to clean and sterilize the dishes, and to handle and serve food.
2. Invite the nurse to talk on the immunization program in the schools.
3. Visit a water filtration plant.
4. Visit a milk plant and study the sanitary methods that are used to keep the milk safe.
5. Have the superintendent or a nurse from a hospital explain the functions and services that are provided to patients.
6. Invite the local sanitarian from the public health department to explain the sewage disposal problems in a community and how the community has or has not solved them.
7. Discuss the communicable disease problems prevalent in a community.
8. Discuss methods used to inspect hotels, motels, and restaurants to make sure that they are safe.
9. Discuss air pollution problems in your local community and state.
10. Discuss the meat inspection laws in your community and state. (How does the federal government help with this problem?)

Safety Education

SUGGESTED OUTCOMES. The suggested outcomes for the safety-education phase of health instruction for the sixth grade are presented below.

1. Understanding of the practices for the maintenance of a safe school building and grounds. (What the individual pupil can do to help.)

2. Acceptance of and cooperation with the school safety patrol.
3. Ability to interpret some accident facts and statistics in the school and community.
4. Recognition of poisons which may be used in the home, such as pesticides, detergents, and so forth.
5. Knowledge of the telephone numbers of the home, fire station, police station, home physician, and hospital.
6. Recognition of the importance of reporting all accidents to the teacher so that she can get the necessary help and use the information for preventing further accidents.
7. Understanding how to cooperate with local safety organizations in the community.
8. Understanding of the use of a check list to evaluate home and school safety. (These check lists are available from the local Red Cross or from the National Safety Council, Chicago, Illinois.)
9. Ability to administer the mouth-to-mouth method of artificial respiration. (Check with the local Red Cross for instructions.)
10. Understanding the use of a first-aid kit. (Check with the local Boy Scout organization for first-aid suggestions.)
11. Acceptance of the use of seat belts in the family car.
12. Knowledge of basic first-aid skills.
13. Ability to apply the basic skills recommended by the local civil defense organization.

SUGGESTED ACTIVITIES. The outcomes suggested for safety instruction in the sixth grade follow.

1. Prepare safety hints for the classroom and post these on the bulletin board.
2. Have the class members make a survey of their community to obtain a list of the organizations interested in safety education.
3. Devise check lists for the prevention of accidents in the school. Check such areas as the halls and stairs, playground and gymnasium, classrooms, those covered in going to and from school, and clothes rooms and locker rooms.
4. Have a civil defense official explain the fundamentals of civil defense practice that are recommended by the local community.
5. Make a map or buy a city or county map and place various colored thumbtacks on the places where most of the automobile accidents happen. Carry on this project for the entire year and evaluate the results at the end.
6. Practice and cooperate in school fire drills.
7. Have the pupils practice the mouth-to-mouth artificial respiration. Use the mouthpieces recommended by the Red Cross and the medical society.

8. Show a film or slides on the various methods of artificial respiration. (Check with the Red Cross, Bureau of Mines, Boy Scouts, or local or state health department for the use of these films.)

9. Have a Red Cross official or nurse explain the fundamentals of first aid.

10. Practice the fundamentals of civil defense.

11. Practice and study to achieve a junior first-aid certificate. (Write to the Red Cross for the certificate requirements and lesson plans.)

SAMPLES OF HEALTH INSTRUCTION CONTENT

In the foregoing section, suggestions were made for the outcomes and activities of the elementary school health instruction program. In doing so, the teacher was urged to adapt her own program to the interests and needs of her pupils and of the state and community in which the school is located. Certainly, considerable flexibility should be allowed in the development of local health instruction courses of study.

A great many states and communities have developed formal syllabi for the guidance of their classroom teachers. The health units identified in five of these appear in Table 4.2 on page 126. The teacher may examine these in order to obtain a broader perspective of the efforts being made to provide effective courses of study in health education. The references for the teaching units presented in Table 4.2 are as follows:

Oregon: *Handbook for Health Instruction in Oregon Elementary Schools*. Salem, Ore.: State Department of Education, 1952.

Pennsylvania: *Course of Study in Health Education*. Harrisburg, Pa.: Department of Public Instruction, 1959; rev. ed., 1963.

Florida: *Effective Living*. Tallahassee, Fla.: State Department of Education, 1950; rev. ed., 1963.

Denver: *Health Interests of Children*. Denver, Col.: Denver Public Schools, 1947; rev. ed., 1963.

Pittsburgh: *A Course of Study in Health Education*. Pittsburgh, Penna.: Board of Education, 1949, rev. ed., 1963.

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association has suggested 12 major health areas.¹⁵ These areas are as follows:

- | | |
|---------------------------------------|-------------------|
| 1. The human body | 7. Mental health |
| 2. Health maintenance and improvement | 8. Family life |
| 3. Food | 9. Alcohol |
| 4. Rest and exercise | 10. Disease |
| 5. Personality | 11. Accidents |
| 6. Personal appearance | 12. Public health |

¹⁵ Joint Committee on Health Problems in Education of the NEA and the AMA, *Health Education* (Washington, D.C.: National Education Association, 1961).

TABLE 4.2

Health Learning Units in Various Syllabi

<i>Oregon</i>	<i>Pennsylvania</i>	<i>Florida</i>	<i>Denver Schools</i>	<i>Pittsburgh Schools</i>
Structure and Function	Nutrition	Making the Most of Yourself	Keeping Physically Fit	Cleanliness and Appearance
Personal Hygiene	Control of Communicable Disease	Understanding Habit-forming Drugs	Group Health	Physical Activity
Physiology of Exercise	Mental and Emotional Health	Understanding Oneselves	Cause of Disease	Recreation and Rest
Nutrition	Work, Play, Fatigue, Rest	Growing into Maturity	Protection from Disease	Safety
First Aid and Safety Education	Home Care of Sick Children	Outwitting Disease Hazards	Structure and Function of the Body	Nutrition
Choice and Use of Health Services and Health Products	Home Care of Young Children	Controlling Environment to Protect Health	Dental Health	Circulation and Respiration
Communicable Diseases (and Noncommunicable Diseases)	Understanding the School Health Program	Assuming Individual Responsibility for Group Health	Good Eating Habits	Eyes, Ears, Voice
Community Health and Sanitation	Health in Social Relationships	Learning to Drive	Selection and Composition of Foods	Mental and Emotional Health
Mental Health (and Family-life Education)	Knowing Your Community Health Services and Narcotics		Stimulants and Narcotics	Disease Control
	First Aid		Rest and Relaxation	Narcotics and Drugs
	Driving and Traffic Safety		Personal Appearance	Young Adult Problems
	Industrial Safety		Personality Development	
	Budgeting for Health		Social Health	
	Self-inventory		Heredity and Eugenics	
			First Aid	
			Home Nursing	
			Safety	
			Health Vocations	

EVALUATION

Evaluation is essential for improvement of the health education program. No classroom teacher should fail to evaluate the results of her program in this area. One of the chief purposes of such evaluation is to take stock of how the instruction is affecting children's living in order to plan improvements. Evaluation should not be justified solely to assign pupils' marks. Rather, evaluation should explore the question, "Are changes in health habits being made?"

What Is Evaluation? ¹⁶

Children's growth and behavior are the major outcomes to evaluate. The goal of school health education is to help children learn to live wholesomely and to meet life with a fair degree of adequacy. In evaluating, it is necessary to ask, "To what extent is the health education program helping children to live more wholesomely, to face life with confidence and zest?"

Sound knowledge about health and how to maintain it is necessary; children and teachers should constantly check to see that this knowledge is gradually being acquired. The ultimate test is, "Do the children act on what they know?" All aspects of the health curriculum are to be evaluated in terms of their effect on children's lives. For example, adequate physical examinations and careful dental surveys are effective only as they result in the actual correction of physical handicaps and in improvement in health.

Sound evaluation requires study of each child and of how well he is moving ahead from the place where he started. His progress can be measured only in terms of his own needs and problems. His developmental level must be considered so that evaluation may be based on reasonable standards.

HEALTH TESTING

In the area of health, various types of examinations and tests are available and should be used by the classroom teacher. In some instances, these evaluations are made by other school personnel; in other instances, the tests may be given by the teacher. Certain of these measures are also of considerable value to physical education. For this type of testing, the evaluative instruments are described in Chapter 3 of this text, although each is mentioned briefly below.

HEALTH APPRAISAL. The health appraisal, made only by a physician,

¹⁶ *Health Education in the Elementary School* (Trenton, N.J.: Department of Education, 1949), p. 111.

is presented in detail in Chapter 3. This appraisal is a phase of the school health service, and it should be considered essential in the school's effort to provide each child a maximal educational opportunity. Physical defects and organic drains are discovered which might logically interfere with the child's school work; appropriate steps are subsequently taken to seek the correction of such conditions.

The health appraisal has two very distinct values for physical education. (1) Pupils with serious defects, of such a nature that they make vigorous exercise harmful to them, are discovered. Although rarities in most schools, such pupils should be provided with a restricted-type activity program, as prescribed by the physician. (2) The health appraisal is helpful in discovering physical defects that result in physiological disturbances that may be the cause of low physical fitness in those pupils so classified by other physical fitness testing procedures.

SENSORY TESTS. Vision and hearing screening tests may be given by the classroom teacher, the school nurse, or the physical educator. The teacher, however, should not use the results of such testing diagnostically, but should refer pupils with atypical scores to the appropriate medical specialist for ophthalmic or otologic examination, as the case may be.

NUTRITION TESTS. The use of tests to measure the nutritional status of children has been a common practice. The purpose of this measurement is to discover those boys and girls who are undernourished and those who are obese in order that appropriate alleviative procedures may be applied.

HEALTH KNOWLEDGE AND ATTITUDES. There are a number of standard health-education tests available; these are discussed in Chapter 5.

Who Evaluates

Everyone in the elementary school should be concerned with school health education and should aid in the evaluation program. The pupils are most directly affected, and they must depend on themselves when they leave school. They must learn to set goals and to evaluate their progress toward these goals. Thus, evaluation may be in terms of what types of meals they are eating, how much rest they are getting, and how much they are participating in play and exercise. Are they safety-minded, and do they practice what they are taught in the classroom? The teachers can check with the parents to see if they are carrying out these health attitudes and outcomes. Teamwork of the nurse, administrator, teacher and health department can all help with the evaluation of the total health instruction program.

How Evaluate?

The classroom teacher should be alert to observe general changes in her pupils from day to day and from month to month. She can check the

personality traits, height and weight, posture, types of exercise, physical fitness, and food habits of her pupils. These should be recorded on the permanent health record card for later follow-up. Chapter 3, on health services, provides information pertaining to this practice.

The classroom teacher and her pupils can work together effectively by studying records, height-weight charts, and some of the health check lists and tests. The teacher can use some of the tests and check lists from the National Safety Council, The National Commission on Safety Education (NEA), and the American Dairy Council (Chicago, Illinois); the check list for evaluating health from the Department of Education, Columbus, Ohio; the check list on bicycle safety from the Aetna Life Insurance Company, Hartford, Conn.; and special tests from the Acorn Publishing Company, Rockville Centre, New York.

New York State Health Education Evaluation

An example of a state proposal for the evaluation of health education has been prepared for use in New York State. Champlin¹⁷ lists the following appraisal questions for evaluating the school health education program:

1. Do we help children and youth to realize the importance of regular health examinations for themselves and for all individuals and the importance of securing treatment, if needed?
2. Are the activities that children and youth are carrying on at school planned so that they learn in the way they live?
3. What are we doing to help children and youth to appreciate the value of healthful and safe surroundings at school, at home, and in public buildings and grounds?
4. Are children and youth being helped to understand themselves and to get along with other people?
5. Do we teach children and youth to know what they can do to help prevent and control disease?
6. Is first aid for simple emergencies being taught to youth?
7. Is youth learning about the health services that every community should provide, such as hospitals, clinics, child care centers, and voluntary and tax-supported health organizations?
8. Are we helping children and youth to understand their role in the family and that of other members in making family life harmonious and wholesome?
9. Are we helping youth to realize the importance of refraining from the use of any substance detrimental to fitness?
10. Is the emphasis in safety education on the development of safe practices and attitudes?

¹⁷ Ellis H. Champlin, *Evaluation of School Health Education* (Albany, N.Y.: State Education Department, 1952).

11. Do we have well-trained teachers to give skilled guidance to children in their classwork and to help them individually with their special health problems?

12. Does the school system have a flexible master plan for the health and safety education program so that all the teachers of health have clear understanding of the health learnings at each grade level in the elementary school, the health teaching in the junior high school, and the health teaching in the senior high schools?

13. How is health teaching evaluated in your school?

a. Are cumulative health records available?

b. Do teachers evaluate?

c. Are oral and written tests used?

d. Are children checking validity of health claims?

e. Are children responsible for their health level and for protection of others?

Evaluative Study, Los Angeles, California ¹⁸

The School Health Education Evaluative Study in the Los Angeles area conducted from 1954 to 1959 is an example of a modern evaluation plan which provided vital evidence of accomplishment. Many school districts were included in the study, with the assistance of an advisory council.

Appraisals in health instruction identified the areas given most attention, as well as the areas of greatest weaknesses. Teaching in dental health, mental health, and consumer health, including medical care and selection of physicians, and community health were neglected areas. Nutrition, safety, and care of the body were frequently listed as strong areas. Health practices lagged behind knowledge and attitudes.

Evaluation can serve as a means for improving efforts to make possible programs of higher quality in the future. In the Los Angeles evaluation, many weak areas were actually fortified during the project with the provision of new materials, the restatement of objectives, and the development of instructional guides for teachers in improving instruction.

HEALTH EDUCATION TESTS

The classroom teacher routinely utilizes written tests in connection with her classwork in all academic subjects. Therefore, she will readily recognize that similar tests are appropriate and useful in health education in order to determine pupils' mastery of health instruction materials and the changes taking place in pupils' health attitudes and practices. Such tests can be prepared by the classroom teacher to fit her particular situation, or she may utilize standard tests in the field. Directions for con-

¹⁸ E. B. Johns, Director, *School Health Education Evaluation Study* (Los Angeles, Calif.: University of California, 1959).

structing objective written tests and a review of available standard health education tests are contained in the following reference: H. Harrison Clarke, *Application of Measurement to Health and Physical Education*, 3rd ed. (Englewood Cliffs, N. J.: Prentice-Hall, Inc. 1959), pp. 42-52 and 368-374.

Test Construction Steps

Rash¹⁹ recommends the following steps in developing the health education test:

1. Determine instructional objectives, or outcomes to be tested.
2. Prepare a table of specifications or test outline, in harmony with the instructional objectives and emphasis.
3. Prepare test items in harmony with the table of specifications.
4. Prepare directions and key, and arrange the mechanical features of the test.
5. Administer the trial application.
6. Refine the test in light of the results of the trial application.
7. Administer the test.

The types of objective questions that may be used in health-education written tests are described below.

TRUE-FALSE. In this common type of objective written test, a statement is made which the pupil marks as true or false. Care must be taken to phrase these statements so that their meanings are clear without obvious clues to their answers.

MULTIPLE-CHOICE. In the multiple-choice form, a statement or question is given with three or more responses, only one of which is correct or definitely better than the others. In preparing these questions, care should be exercised to avoid irrelevant or superficial clues or testing other than memorized knowledge. All choices should be plausible.

MATCHING. Two varieties of matching questions are as follows: (1) sentence-completion matching, in which the completion of a sentence is required by matching it with a column of items, only one being chosen as correct; and (2) column-matching, in which words, sentences, numbers, or phrases arranged in two opposite columns are matched. In the latter instance, the pupil merely indicates which items go together.

SIMPLE RECALL. The simple recall test is one in which the answer is not suggested but must be recalled. There are three main forms of this test type, as follows: (1) short answers; (2) test items that require identification or specific information; and (3) a word or phrase requiring definition. This type of question is particularly valuable in the identification of various items (for example, muscles of the body from a diagram) and in problem-solving requiring computation.

¹⁹ J. Keogh Rash, "Refining the Health Education Test," *Journal of School Health*, 23, No. 1 (January 1953), 11.

COMPLETION. In the completion test, sentences are given in which certain important words or phrases have been omitted, the resulting blanks to be filled in by the pupils.

Standardized Tests

The departments of education in a number of states have constructed objective written tests in health education. The classroom teacher may wish to check her own state to see if such tests are available. Listed below, with their sources, are the names of tests standardized through research that are appropriate for the elementary school grades.

Byrd Personal Health Inventory, by Oliver E. Byrd. Stanford, Calif.: Stanford University Press, 1947.

Mayshark Health and Safety Attitude Scale, by Cyrus Mayshark: "A Health and Safety Attitude Scale for the Seventh Grade," *Research Quarterly*, 27, No. 1 (March 1956), 52. (Can be used in the sixth grade.)

Safety Misconceptions, by Joseph C. Dzemowagis and Leslie W. Irwin: "Prevalence of Certain Harmful Health and Safety Misconceptions among Fifth- and Sixth-grade Children," *Research Quarterly*, 25, No. 2 (May 1954), 150.

Safety Test, Grades 3 to 6, by Lester D. Crow and Loretta C. Ryan: *Health and Safety Education Test*. Rockville Centre, N.Y.: Acorn Publishing Co., 1960.

Safety Test—Grades 5 and 6, by Joseph C. Dzemowagis: *Self-quiz of safety knowledge*. Chicago, Ill.: National Safety Council, 1956.

Health Test for Grades 3 to 8, by Robert K. Speer and Samuel Smith: *Health Test*. Rockville Centre, N.Y.: Acorn Publishing Co., 1957.

Safety Tests—All Grade Levels. Chicago, Ill.: National Safety Council.

SUMMARY

Adequate health instruction in the elementary grades aids in the improvement and preservation of the health of the future citizens of the United States. Health education provides the essential knowledge, attitudes, and practices of healthful living.

The solution of many health problems depends upon getting individuals to use the findings of preventive medicine in everyday living. To be free from disease and to be physically fit are not the whole of health, but they are certainly a part of it. Education for health must still include a working knowledge of the structure and function of the body and the nature of disease, including the prejudices which block the intelligent use of medical knowledge.

The present concept of health indicates that health is an indivisible unity; thus, physical fitness, mental health, and emotional health are aspects of total health. The problem is complex. The elementary school promotes a cooperative effort to work with the home and the community

in order to promote the pupils' optimum growth so that they can cope with the rapid changes in the environment.

There are still some unmet health problems existing today, and health instruction can aid in teaching about the prevention of these health problems. Many children are impaired by heart disease, cerebral palsy, epilepsy, and poliomyelitis. Many are also handicapped by visual and hearing impairments and emotional disorders. Accidental injuries are frequent in the elementary age group, and much more safety education is needed in the schools and the community.

The classroom teacher is the key person in the development of a good and sound health instruction program in her school and in the classroom. She has the opportunity to organize the health instruction to fit the needs and interests of her pupils. She can interview and study the health habits of her pupils. Through teacher observation and screening tests, she is able to know these immediate health problems.

Many local and state education departments have done extensive research in locating health problems and needs of children. Such studies as the Denver and the Los Angeles School Health Education Evaluative Study are examples. Many states have outstanding courses of study in health education for the elementary schools. Among these are Oregon, Florida, New York, New Jersey, California, Texas, Ohio, Illinois, and Pennsylvania. Many communities also have their own courses of study to meet the needs of their respective situations.

Many professional organizations have contributed to the improvement and content of health instruction; these include the American Medical Association, the American Dental Association, the American School Health Association, the American Association for Health, Physical Education and Recreation, and the American Public Health Association. Many universities and colleges have conducted seminars and workshops for teachers to aid them in organizing and evaluating health instruction.

Many check lists, tests, and other evaluating techniques have been developed and reported in the research literature. The classroom teacher should become acquainted with the publications of the National Safety Council, The National Commission on Safety Education of the National Education Association, the various testing organizations, their public health departments, the voluntary health organizations, and the *Research Quarterly*. There are also many professional health personnel who are willing to aid the classroom teacher. She may wish to contact the local colleges and universities where professional health educators are employed.

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Chapter

5

Methods and Resource Materials in Health Education

IN THE PRECEDING CHAPTER, suggestions for the instructional program of health education in the elementary school grades were presented. As all classroom teachers will readily recognize, the selection and utilization of health content appropriate for and adapted to the boys and girls in their various classrooms are vital. Further, classroom teachers will realize that the method of presentation is also essential. This chapter is devoted to the methodology of health instruction. Considerable emphasis is given to the availability of resource materials in health education as a necessary aid to classroom teachers in planning and conducting effective programs in this field.

THE LEARNING PROCESS

Kilpatrick¹ has summarized his philosophy of learning by promulgating the following four principles:

1. Learning takes place when any part or aspect of the ongoing experience remains with one, to be recalled at appropriate times in order for it to enter into the life process and to help shape that process.
2. Facts are learned to the degree that they are accepted by the individual as things to live by; one has learned what he lives.
3. Anything—a thought, an attitude, a bodily movement—has been learned to the degree that it thereafter tends to go back into life at the right time to play there its appropriate part.

¹ William Heard Kilpatrick, "We Learn What We Live," *Childhood Education*, 25, No. 2 (October 1948), 54.

4. Learning takes place to the degree of importance the individual attaches to the thing learned; the importance of the thing learned is related to its understanding, how it is fitted into the pattern of other things learned and believed, and its application to living.

The first phase of a learning experience is the recognition of a novel situation or identification of a problem. The organism is confronted with facts which represent a partially or completely new situation. Later, these conditions are analyzed and investigated and organized into a problem, large or small, important or unimportant, as it may seem.

The learner draws upon all he has "learned" from his past experience and from his total environment for any data that seem to have a bearing on the present situation. From his surroundings, the learner selects the data, ideas, and attitudes which seem to bear on the solution of the problem.

FACTORS INFLUENCING THE LEARNING PROCESS

A number of essential factors influence the learning process. Those considered basic to this process are presented briefly below.

HEREDITY. Heredity affects the learning process by determining the innate capacities for learning and behavior. Through their heredities, children are provided with the physical and mental equipment to learn.

INTELLIGENCE. Intelligence is defined as innate mental ability, that is, the capacity possessed when born. Effectual intelligence refers to the fact that one's mental ability can be lowered or raised, can be applied to recognized environmental conditions. Stated in another way: Intelligence is that power of mental behavior that permits thinking, the creation of new thought patterns, imagining the possible outcomes, and other mental phenomena that make up learning.

MATURATION. Maturation refers to the physical growth of the child. It is both a limiting and an energizing factor in the learning process. It may tend to limit the potential amount of learning that may take place up to a given maturity level. Maturation also refers to the growth of the brain, the nervous system, and the sense organs. Thus, a child may be awkward owing to lack of practice in activities requiring muscular coordination, or he may be awkward because he has not achieved a proper level of maturity. The same can be true of eye movements and reading ability. Thus, maturation is related to the natural physical development which permits efficient learning.

INTEGRATION. Integration is the ability to maintain a normal degree of equilibrium in various intricate ways. It enables one to fit into the social pattern of his group, to possess well-balanced emotions, to be able to cooperate with groups, and to be physically fit.

EMOTIONS. In the normal learning situation, emotions may serve to

enrich experience through the senses. Normal and well-balanced emotional behavior should become a part of every learning experience.

ENVIRONMENT. Learning takes place in the environment and is influenced by it. Proper foot habits, problems of love, physical fitness, a feeling of belonging, the types of companions, all are closely related to the factors of environment. These factors, in turn, influence learning.

ORGANIZATION OF MATERIALS

Good teaching necessitates an organization plan, which should be based on the interests and needs of the pupils as well as the objectives set up by the teacher or health administration. The health activities should stimulate and be meaningful to the pupils. These health experiences should lead to good health habits and should carry over into adolescence and throughout adult life.

The Health Unit

The health unit is usually broken down into small areas, or subdivisions or subunits, usually based upon a health topic, a health question, or a health problem. A typical unit is about two to five weeks in length, depending upon the extent of the health area and the pupils' need of it and interest in it. The teacher should attempt to cover the area or unit as based on a broad emphasis, stressing the development of the correct attitudes.

The scope of the unit can be divided into the following classifications:

1. *The single health subject*, where the teacher draws exclusively from one main area in health.
2. *Correlated area*, where the main health unit is taught as a separate subject but can be related at different intervals to current health areas in other classes in the curriculum.
3. *Integrated unit or area*, where the health materials and subject content are organized regardless of content area and are centered around a health topic, problem, or questions.

Characteristics of the Health Program

The health program should be dynamic, and not static. The characteristics of such a health program² may be described as follows:

1. Health education is an integral part of the administrative context and curriculum at every level and is recognized as a part of the general education of all students.
2. Experiences that enable the individual to develop his abilities for action toward improved individual and group health grow out of the

²Edward B. Johns, "A Point of View for School Health Education," *Journal of Health, Physical Education, and Recreation*, 38, No. 8 (November 1962), 25.

discovery and appraisal of health needs. In addition, consideration should be given to student needs as they relate to medical, dental, nutritional, and psychiatric activity.

3. Health education does not confine its activities to children but extends beyond the school and college to the home and the community and into adult life. Many community agencies supplement the schools in these efforts.

4. The conduct of the total program of health education requires the talents of many health and education personnel working together in a cooperative manner to achieve common goals.

5. The individual has responsibility for the creation and maintenance of conditions which contribute to his health and to the health of others. Group action is important in motivating individuals to solve their own health problems.

6. Adequate financial support is necessary to provide the required personnel and materials in order to achieve the ultimate goals of health education.

7. The adequacy of health education cannot be evaluated by ordinary standards or in ordinary periods of time. One bit of health information applied now may save a life in the present or 40 years later in the future.

These characteristics reflect the elements of a dynamic philosophy of health education applied to program-planning. The ultimate goals of health education may be achieved, however, only if strong leadership is exerted.

TIME FOR TEACHING HEALTH

There seems no general agreement on the exact amount of time that should be scheduled for the health course at the several grade levels. Even the various state health committees and the professional health organizations are not explicit in designating exact minimum or maximum time requirements. Most of the professional health organizations agree, however, that the time allotment in the elementary school should be on the same basis as for other subjects in the curriculum.

The scheduling of health instruction in the elementary schools has its difficulties. In the upper elementary grades, regular health units can be taught by the classroom teacher as a special subject. However, some units can be correlated with other elementary school subjects. In the lower grades, the integrated method of health instruction is commonly employed.

Scheduling suggestions are usually available from the local school administration staff when health education is an integral part of the curriculum. In many states, the state department of education employs a director of health and physical education, who issues courses of study in

health instruction. These courses of study usually suggest the health content to be taught and the methods of scheduling health classes.

HEALTH TEACHING METHODS

Teachers in health instruction must be concerned with improving health practices. The health problems must be emphasized in terms of pupil behavior, not merely in presenting health facts. For this reason, the classroom teacher should exert every effort to instill the principles and concepts of everyday healthful living into real-life health experiences.

Today's elementary school student may live to reach the age of 90 or 100 years. Thus, he will need to apply proper health knowledge long after family-rearing has slackened and disappeared. This means that the health interests and habits needed to reach this age start in the early years; during this time, he should develop basic exercise, good nutrition practices, and proper health attitudes and habits each year of his school-age life.

Basic Criteria

The selection of teaching methods for health instruction should be based upon the following basic criteria:

1. Any instructional procedure should be regarded only as an educational tool.
2. The techniques should be suitable to the maturity and grade level of the pupils.
3. The effectiveness of the health methods employed should be judged in terms of their potential contribution to a realization of the health education objectives established by the teacher or the health experts in the school system.
4. The presentation of the health materials should be interesting to pupils and should create a concern for health.
5. Teachers should know the fundamentals of health education subject matter and the proper audio-visual materials available for supplementary health instruction.
6. Through group techniques, teachers can facilitate the development of good attitudes and health skills in working with others.
7. Every teacher should utilize community resources to provide concrete and realistic experiences to enrich the study of health topics.

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FIELD TRIPS. As a dynamic phase of health instruction, field trips may be scheduled to places in the community and its environs that are related to health topics under consideration. Thus, firsthand and realistic experiences may be provided for the children. Field trips may be taken to a dairy, a bakery, a meat-processing plant, the health department, the fire department, the traffic unit of the police department, and the like. These trips also contribute to good mental health, as they provide good group experiences that contribute to class morale and good discipline. Usually, these trips are of greater value to children of the upper elementary grades, as these youngsters are better able to grasp the safety and preventive health implications thus observed.

ORAL REPORTS. Oral reporting is a type of expression that provides the classroom teacher with an excellent means for obtaining information relative to the attitudes, likes, dislikes, and prejudices of her pupils. The art of making a report before the class provides the pupil with a good experience in expressing self-confidence. It also provides an excellent opportunity for the class to participate in a discussion at the conclusion of the oral report. The teacher can suggest a list of health topics for oral presentation. Such topics are regularly found in *Today's Health*, a magazine published by the American Medical Association. This is a good resource area for current health information.

INFORMAL DISCUSSIONS. The classroom teacher will be able to know her pupils much better if she engages in informal discussion with them outside the classroom. The teacher can see another side of the child's personality when not restricted to the formal atmosphere of the classroom. Under this type of informal questioning and discussion, the pupil will relax and discuss his particular health problems in a free and easy manner. These informal discussions can take place on the playground, in the halls, between classes, before and after school, and in the locker rooms.

PROBLEM-SOLVING. To utilize this instructional method, the pupils are presented with a health problem, which they attempt to solve through discussion in the classroom. The classroom teacher can set up the health problem and the students can undertake to solve the problem. The pupils collect the data to be presented in class and try to arrive at a logical solution. The teacher should see that the pupils' procedure conforms to the five basic steps as she guides their thinking process: (1) they should realize a felt need or difficulty, (2) they should locate and define the problem, (3) they should suggest possible solutions, (4) they should reason about the suggested solutions, and (5) they should observe and study the solutions in order logically to accept or reject them. The teacher should ask the question, "What is already known about this health problem?" Select the health problems which are based on the pupils' interests

Instructional Methods

A number of specific health instruction methods are available to the classroom teacher. The teacher should select the method which best meets the instructional need at a given time or for the presentation of a particular type of health material. These methods are discussed below.

BRAINSTORMING. While "brainstorming" has an undesirable connotation, as it implies a strenuous indoctrination while stifling thought, there may be times in health education when its use is justified. This process can be effectively used when a new health product has been introduced and it is desirable to achieve its immediate understanding and adoption. Further, this method may be utilized when health emergencies occur in the community, or when it seems especially necessary to obtain a quick acceptance of new health ideas or to combat undesirable health concepts and practices. The characteristics of the "brainstorming" method are as follows:

1. The teacher presents the health problem to the class, completely and forcefully.
2. Quantity rather than quality of ideas is stressed.
3. Participants are cautioned not to criticize the ideas of others, but to permit free interchange.
4. All participants are encouraged to speak up and contribute any idea that may occur to them.
5. Participants should suggest ways in which ideas proposed by others may be joined to develop still more ideas or should suggest alternatives. A recorder should jot down all the suggestions of participants. It is the belief that individuals in a group demonstrate a greater degree of creative thought, through the stimulation which each may provide to the others, than do individuals functioning independently.

BUZZ SESSIONS. The "buzz session" is a technique for stimulating the discussion of particular problems of concern to a group. First, the classroom teacher should lead the class in deciding on a topic; this is written on the chalkboard. She may then ask the group to suggest various subtopics which relate to the problem. These subtopics are also written on the chalkboard beneath the main heading. The class then divides into smaller groups. Each subgroup selects a discussion chairman and a recorder who will make notes on the discussions and later report to the entire class.

DEBATE. When "debate" is utilized as an instructional method, the class is divided into two teams with from six to eight members. One team takes up the "pros" and the other takes up the "cons" of a health problem. Such topics as fluoridation, pasteurization, and the like may be debated. Each team member is allowed an individual presentation. Rebuttal follows.

GUEST SPEAKERS. Specialists from the community in the fields of health and safety can be used to supplement the health units. Such speakers can be contacted through the local or state health departments, fire department, police department, medical and dental societies, voluntary health organizations, and the colleges' and universities' faculties, if nearby.

RECREATIONAL ACTIVITIES. The mutual sharing of enjoyable experiences with the group contributes greatly to the morale of both the group and the individual. Satisfying the need to belong to and participate as part of a group is a basic need of boys and girls. Parties, picnics, group games, and sports are examples of desirable activities that develop good mental and emotional health.

HEALTH EDUCATION TEXTBOOKS

As is true for all school subjects, the classroom teacher may use a textbook for her health instruction. A textbook is especially necessary when the teacher does not have other health education materials available. However, health instruction can be stronger when both a textbook is utilized and the textbook is supplemented by other aids.

The health textbook selected should be accurate and free from errors, although checking the validity of a textbook in all its detail may be very difficult for the classroom teacher. That such errors do occur is shown in a study by Kilander, Hein, and Mitchell,³ who examined seven elementary school textbooks for health content accuracy. The range of errors found in the seven texts was from 2 to 17; the average per book was 8 errors, or about 4 errors per 100 pages. The most errors were found in the area of nutrition. Owing to the scientific advances and changes in the field of health, an appreciable amount of the health content of textbooks tends to become outmoded, inaccurate, and obsolete in time. Publishers need to replace their textbooks sufficiently often to meet this problem.

Health Textbooks Available

A number of publishing houses have issued health textbooks for use in the elementary school. In each instance, a separate volume is available for each grade. A list of these publishers, with the text titles for the various grades, follows.

1. American Book Company, 55 Fifth Avenue, New York 3, N. Y.
 - Grade 1 *All Day, Every Day*
 - Grade 2 *Blue Skies*
 - Grade 3 *Come Rain, Come Shine*
 - Grade 4 *Among Friends*

³H. F. Kilander, Fred V. Hein, and Harold H. Mitchell, "The Accuracy of Health Content of School Textbooks," *Journal of School Health*, 23, No. 7 (September 1953), 216.

and needs. Community needs also provide important problems for application of this technique.

HEALTH DEMONSTRATION. In applying this instructional method, the teacher demonstrates a health fact or principle before the class. Sometimes this technique is used to supplement the teacher's health lesson. At other times, an outside resource person may do the demonstrating. Or, if the health project demands it, the pupils may give the demonstration. The teacher and the pupils can facilitate the demonstration by setting up the equipment before the class starts.

SOCIODRAMA. The sociodrama is usually an unrehearsed skit built around some health problem selected by either the teacher or the pupils. Sometimes help can be obtained from other subject teachers or the supervising health specialist. Additional characters to support the main performers may be drawn from the class. The sociodrama usually takes about 20 to 30 minutes and can be followed by class discussions. First-aid practices can be effectively demonstrated by utilizing this technique.

SURVEYS. In the upper grades especially, health and safety surveys can be made in the school, home, and community. The children learn by doing, in the planning of the survey and in actually checking the results. These surveys can frequently lead to the improvement of existing poor health practices and conditions. A good example is to visit a food establishment to check its sanitary conditions and the process of food handling; a similar survey can be done in the school cafeteria. Traffic surveys can also be taken around the school in order to identify traffic hazards. Survey check lists can usually be obtained from the sanitation department of the local health department or from the state public health department. A side benefit can be realized from an evaluation of these check lists by the teacher and the pupils.

AUDIO-VISUAL AIDS. The teacher may effectively supplement her health unit presentations by the use of the bulletin board, charts, models, exhibits, filmstrips, maps, motion pictures, puppets, tape recordings, radio, and television. As the availability of audio-visual materials is so extensive, the teacher is forced to make selections. She can set up criteria for such selection. The following criteria are suggested:

1. Are the experiences varied as to type?
2. Are the experiences within the grasp of the pupils?
3. Are the experiences challenging to the children?
4. Do the experiences foster cooperation?
5. Do the experiences meet life needs of pupils?

LECTURE AND DISCUSSION. For this approach to health instruction, the teacher does the lecturing and invites the pupils to ask questions to start discussion of the health topic under consideration. The teacher should be alert to encourage the slow pupils to enter into the discussion. A lively lesson in health usually takes on new meaning by use of this technique.

- Grade 3 *Seven or So*
- Grade 4 *Going on Ten*
- Grade 5 *About Yourself*
- Grade 6 *Almost All of Us*

Textbook Committees

Many state departments of education, and also local school systems, appoint a textbook committee to review and recommend textbooks to be used in the schools. As a rule, separate committees are designated for the elementary grades, the junior high schools, and the senior high schools. State committees are usually appointed by the state superintendent of public instruction, the members being selected from the teaching profession, from university faculties, and from public school administrators. The first function of these committees is to establish criteria to aid them in selecting the right type of texts; they then proceed with making the selections.

In examining health texts, each committee looks for accuracy of essential facts, type of print and format, scientific content, readability for the specific age group, and availability of sufficient supplementary materials for use by pupils and teachers. Some publishers issue a teachers' manual which accompanies their textbooks. These manuals give additional teaching hints, health references, available audio-visual materials, and samples of tests that the teacher can use.

HEALTH MATERIALS FOR TEACHERS

There are numerous health organizations in the United States where the teacher can send for free or inexpensive health materials. Many of these national organizations have branch offices, so that the teacher is frequently able to contact local offices without waiting for materials to be sent through the mails. These national organizations have educational consultants and medical advisers on their staff to aid in the writing and organization of the health materials that they publish.

Local Sources

The teacher can obtain much of the free and inexpensive health materials from within the local community. It is advisable to consult with the local health department in making the selection of these materials. If a public health educator is on the staff, he may have a mimeographed list of the materials on hand in his department. Over the years, he has usually evaluated these materials as to their effectiveness, accuracy, and grade placement.

Some of the organizations that the teacher may be able to contact locally for health materials are:

- Grade 5 *Broad Streets*
- Grade 6 *Crossroads*
- 2. Bobbs-Merrill Co., Inc., 1720 East 38th Street, Indianapolis 6, Ind.
 - Grade 1 *Come On*
 - Grade 2 *Here We Go*
 - Grade 3 *Step Lively*
 - Grade 4 *Health and Growth*
 - Grade 5 *Health and Living*
 - Grade 6 *Health and Happiness*
- 3. Ginn & Company, Statler Building, Back Bay P. O. 191, Boston 17, Mass.
 - Grade 1 *Health and Happy Days*
 - Grade 2 *Health in Work and Play*
 - Grade 3 *Health and Safety for You*
 - Grade 4 *Growing Your Way*
 - Grade 5 *Keeping Healthy and Strong*
 - Grade 6 *Teamwork for Health*
- 4. Holt, Rinehart & Winston, Inc., 1010 Arch Street, Philadelphia 7, Penn.
 - Grade 1 *From Head to Toe*
 - Grade 2 *Side by Side*
 - Grade 3 *How We Grow*
 - Grade 4 *Bigger and Better*
 - Grade 5 *Getting Acquainted*
 - Grade 6 *Knowing Yourself*
- 5. Laidlaw Brothers, Thatcher & Madison Aves., River Forest, Ill.
 - Grade 1 *First Step to Health*
 - Grade 2 *Learning about Health*
 - Grade 3 *Habits for Health*
 - Grade 4 *Building for Health*
 - Grade 5 *Your Health*
 - Grade 6 *Growing to Health*
- 6. Lyons and Carnahan, 2500 Prairie Ave., Chicago 16, Ill.
 - Grade 1 *Awake and Away*
 - Grade 2 *Growing Day by Day*
 - Grade 3 *Keeping Fit for Fun*
 - Grade 4 *All about Health*
 - Grade 5 *Better Health for You*
 - Grade 6 *Safeguards for Your Health*
- 7. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y.
 - Grade 1 *Book 1*
 - Grade 2 *Book 2*
 - Grade 3 *Book 3*
 - Grade 4 *Book 4*
 - Grade 5 *Book 5*
 - Grade 6 *Book 6*
- 8. Scott, Foresman & Company, 433 East Erie St., Chicago 11, Ill.
 - Grade 1 *Just Like Me*
 - Grade 2 *Being Six*

- California Agriculture Extension Division, College of Agriculture, University of California, Berkeley, Calif.
- Carnation Company, Box 2035, Los Angeles 36, Calif.
- Cereal Institute, Inc., 135 South La Salle St., Chicago 3, Ill.
- Church and Dwight Co., Inc., 70 Pine St., New York 5, N.Y.
- Connecticut Mutual Life Insurance Co., Hartford, Conn.
- Cream of Wheat Corporation, Minneapolis 13, Minn.
- Eli Lilly, Public Relations Department, Indianapolis, Ind.
- Equitable Life Assurance Co., 392 Seventh Ave., New York 1, N.Y.
- Evaporated Milk Association, 228 North La Salle St., Chicago 1, Ill.
- Florida Citrus Commission, P. O. Box 1720, Lakeland, Fla.
- Ford Motor Company, Research and Information Department, The American Road, Dearborn, Mich.
- General Mills, Inc., 9200 Wayzata Blvd., Minneapolis 26, Minn.
- Kellogg Company, Battle Creek, Mich.
- Kimberly-Clark Corporation, Neenah, Wis.
- Lever Brothers Corporation, 390 Park Ave., New York 22, N.Y.
- Metropolitan Life Insurance Co., 1 Madison Ave., New York 10, N.Y.
- National Association for Mental Health, 267 West 25th St., New York 1, N.Y.
- National Canners Association, 1133 20th St., N.W., Washington 6, D.C.
- National Council on Alcoholism, 2 East 103rd St., New York 29, N.Y.
- National Education Association, 1201 16th St., N.W., Washington 6, D.C.
- National Health Council, 1790 Broadway, New York 19, N.Y.
- National Rifle Association, 1600 Rhode Island Ave., Washington 6, D.C.
- National Safety Council, 429 North Michigan Ave., Chicago 11, Ill.
- National Society for Crippled Children and Adults, 2023 West Ogden Ave., Chicago 12, Ill.
- National Society for the Prevention of Blindness, Inc., 1790 Broadway, New York 19, N.Y.
- National Tuberculosis Association, 1790 Broadway, New York 19, N.Y.
- National Women's Christian Temperance Union, 1730 Chicago Ave., Evanston, Ill.
- Personal Products Co., Milltown, N.J.
- Procter and Gamble, P. O. Box 599, Cincinnati, O.
- Prudential Insurance Company of America, 5757 Wilshire Blvd., Los Angeles 54, Calif.
- Public Affairs Pamphlets, 22 East 38th St., New York 16, N.Y.
- Ralston Purina Co., Checkerboard Square, St. Louis 2, Mo.
- Science Research Associates, Inc., 57 West Grand Ave., Chicago 10, Ill.
- Sumkist Growers, Box 2706, Terminal Annex, Los Angeles 54, Calif.
- The Cancer Bulletin, 2310 Baldwin St., Houston 6, Tex.
- The National Foundation, 800 Second Ave., New York 17, N.Y.
- The Readers Digest, Pleasantville, N.Y.
- Traffic Institute, Northwestern University, 1804 Hinman, Evanston, Ill.
- Travelers Insurance Co., Hartford 15, Conn.
- United Cerebral Palsy, 369 Lexington Ave., New York 17, N.Y.
- United Fruit Co., Pier 3, North River, New York 6, N.Y.

American Cancer Society
 American Heart Association
 American National Red Cross
 Arthritis and Rheumatism Foundation
 Civil Defense organization
 Epilepsy League
 Local colleges and universities
 Local dairy council
 Local insurance companies
 Local medical and dental societies
 Local public health department
 Mental Health Association
 Muscular Dystrophy Association
 National Foundation (Polio, Arthritis)
 Tuberculosis and Health Association
 United Cerebral Palsy Association
 Women's Christian Temperance Union

National Health Organizations

If the teacher cannot obtain the necessary materials from the local or state offices of the health organizations, then she should write to their national offices. While the following addresses are not all-inclusive, they should be of considerable help to the classroom teacher in obtaining desirable supplementary materials for her health teaching.

Allergy Foundation of America, 801 Second Ave., New York 17, N.Y.
 Allied Youth, Inc., 1346 Connecticut Ave., N.W., Washington, 6, D.C.
 American Association for Health, Physical Education and Recreation, 1201 Sixteenth Ave., N.W., Washington 6, D.C.
 American Automobile Association, 1712 G Street, N.W., Washington 6, D.C.
 American Cancer Society, 521 West 57th St., New York 19, N.Y.
 American Dental Association, 222 East Superior St., Chicago 11, Ill.
 American Dietetic Association, 620 North Michigan Ave., Chicago 11, Ill.
 American Foundation for the Blind, 15 West 16th St., New York 11, N.Y.
 American Hearing Society, 919 Eighteenth St., Washington 6, D.C.
 American Institute of Baking, 400 East Ontario St., Chicago 11, Ill.
 American Institute of Family Relations, 5287 Sunset Blvd., Los Angeles 27, Calif.
 American Medical Association, 525 North Dearborn St., Chicago 10, Ill.
 American National Red Cross, 17th and D St., Washington 13, D.C.
 American Optometric Association, 4030 Chouteau Ave., St. Louis 10, Mo.
 American Physical Therapy Association, 1790 Broadway, New York 19, N.Y.
 American Seating Co., 9th and Broadway, Grand Rapids 2, Mich.
 American Social Health Association, 1790 Broadway, New York 19, N.Y.
 Association for Family Living, 32 West Randolph St., Chicago 1, Ill.
 Association of Casualty and Surety Co., 60 John St., New York 38, N.Y.
 Association Press, 291 Broadway, New York 7, N.Y.
 Bicycle Institute of America, Inc., 122 East 42nd St., New York 17, N.Y.

time to time, and new pamphlets are constantly being issued. However, to aid the classroom teacher in locating titles and sources of especially useful health education items, a tentative list is provided below.

In presenting this list, the materials are listed under the various health units. Only the name of the association or agency issuing each item is given; the address in each instance can be found in the foregoing section. Some of these pamphlets are appropriate for the teacher's use only, while others can be utilized effectively by the elementary school pupils. In order to differentiate the usefulness of the items listed, the following code is used: "T," for use by the classroom teacher; "E," for showing to elementary school children.

Body Care and Development

- "A Dental Health Program for Schools," American Dental Association. (T)
- "Child Who Is Hard of Hearing," U. S. Government Printing Office. (T)
- "Dental Health Facts for Teachers," American Dental Association. (T)
- "Elementary Teachers' Kit," American Optometric Association. (T)
- "Everybody Smiles," American Dental Association. (E)
- "Fluoridation Facts," American Dental Association. (T)
- "For Good Teeth," Metropolitan Life Insurance Company. (T)
- "How to Tell Your Child about Sex," Public Affairs Pamphlet. (T)
- "Ocular Defects in Preschool Children," National Society for the Prevention of Blindness. (T)
- "Publications about Your Health," American Medical Association. (E) (T)
- "Take Care of Your Eyes," National Society for the Prevention of Blindness. (T)
- "The Story of Blood," American Red Cross. (T)
- "What Teachers See," Metropolitan Life Insurance Company. (T)

Personal Health Problems

- "Alcoholism, a Sickness that Can Be Beaten," Public Affairs Pamphlet. (T)
- "Cigarettes and Health," Public Affairs Pamphlets. (T)
- "Frank Visits the Dentist," American Dental Association. (E)
- "Growing up and Liking It," Personal Products Company. (E)
- "Health Bulletin for Teachers," Metropolitan Life Insurance Company. (T)
- "Personality Counts," (chart) National Dairy Council. (E)
- "Teaching about Hearing," American Hearing Society. (T)
- "Today's Health," (magazine) American Medical Association. (T)
- "Toothbrushing," American Dental Association. (E)
- "Ways to Keep Well and Healthy," National Tuberculosis Association. (E)
- "What Every Teacher Should Know about the Physical Condition of Her Pupils," U. S. Government Printing Office. (T)

Foods and Nutrition

- "A Nutrition Guide," General Mills. (T)
- "Every Day—Eat the 1-2-3-4 Way" (poster), National Dairy Council. (E)
- "Food for Fitness," U. S. Department of Agriculture. (T)
- "Food to Grow On," National Livestock and Meat Board. (E)
- "Foods for Growing Boys and Girls," Kellogg Company. (E)
- "Foodway to Follow," American Institute of Baking. (E)

- United States Department of Agriculture, Office of Information, Washington 25, D.C.
United States Department of the Interior, Washington 25, D.C.
United States Government Printing Office, Division of Public Documents, Washington 25, D.C.
United States Office of Education, Department of Health, Education and Welfare, Washington 25, D.C.
United States Public Health Service, Department of Health, Education and Welfare, Washington 25, D.C.
World Health Organization Publications, 1501 New Hampshire Ave., N.W., Washington 6, D.C.

As might be expected, the addresses of such agencies as those listed above may change occasionally. Teachers can keep them up to date each year by consulting their local health department or the voluntary health organizations in their community. Many state health departments issue free lists of pamphlets containing the names and addresses of various organizations that provide health materials. Further, many courses of study in health education contain lists of supplementary health aids and where they may be obtained.

Utilization of Health Materials

In using health resource materials, the teacher should refrain from indiscriminate ordering; she should first evaluate the unit to be taught and plan how the materials will be used to supplement the particular health topic under study. She should request only those items needed, in order to be considerate of the organizations involved, as they have spent large sums of money developing these health materials. The following are a few suggestions to the teacher in ordering these health materials.

1. Place your order for health materials with the letter written on school stationery.
2. Order a single copy of each item first, so that it can be evaluated before ordering enough copies for the class.
3. Allow ample time for the return of the materials.
4. Indicate in your letter the grade level for which they are to be used.
5. You can use these materials over and over for each class if they are collected at the end of each class.
6. Check on the amount of advertising in the materials, as too much may hinder the educational presentation.

LIST OF HEALTH EDUCATION MATERIALS

A tremendous amount of inexpensive health education materials is available for the elementary school grades. Thus, any list provided the classroom teacher would necessarily be selective and current only at the time it was prepared. As would be expected, these materials change from

- "Some Questions and Answers about V.D.," American Social Health Association. (T)
- "The Crippled Child: A Classroom Asset," National Society for Crippled Children and Adults. (T)
- "The Tuberculin Test," National T.B. Association. (T)
- "Trichinosis," U. S. Department of Agriculture. (T)
- "Tuberculin Tests for Your Pupils," National T. B. Association. (T)
- "What Does a Tuberculin Reaction Mean?" U. S. Department of Health, Education and Welfare. (T)

Community Health

- "Health Effects of Air Pollution," U. S. Department of Health, Education and Welfare. (T)
- "Insects that Carry Disease," U.S. Department of Health, Education and Welfare. (T)
- "Key to Community Health," American Medical Association. (T)
- "Maintown Dental Health Project," American Dental Association. (T)
- "Safe and Sanitary Home Refuse Storage," U. S. Department of Health, Education and Welfare. (T)
- "The Cold Facts about Safe Food," Equitable Life Assurance Company. (T)

Emotional Health

- "Basic Facts about Mental Illness," National Association for Mental Health. (T)
- "Emotions and Physical Health," Metropolitan Life Insurance Company. (T)
- "For Good Mental Health in Your Community," National Association for Mental Health. (T)
- "Looking Forward to School," Equitable Life Assurance Company. (T)
- "Mental Health—Everybody's Business," Public Affairs Pamphlet. (T)
- "Mental Health Is a Family Affair," Public Affairs Pamphlet. (T)
- "The Only Child," Public Affairs Pamphlet. (T)
- "Understanding Your Child from Six to Twelve," Public Affairs Pamphlet. (T)
- "Understanding Your Young Child," Metropolitan Life Insurance Company. (T)
- "What Is Mental Illness?" U. S. Government Printing Office. (T)
- "Worry Go-Around," Connecticut Mutual Life Insurance Company. (T)
- "Your Child's Questions," American Social Health Association. (T)

HEALTH PERIODICALS

The classroom teacher may wish to subscribe to one or more health periodicals, so that she may keep up to date on the latest health education developments. She should also have access to other magazines in this field through her school library or, if nearby, a college or university library. Health organizations in the community may be able to make such publications available to the teacher.

A magazine of special value to the classroom teacher in presenting her health instruction program in *Today's Health*, published by the American Medical Association. This publication is abundantly supplied with interesting and scientific information on all parts of health topics. Health publications, and their sources, are listed below.

- "Good Health Record," Kellogg Company. (E)
- "Guide to Good Eating," National Dairy Council. (T)
- "Nutrition and Health Growth," U. S. Government Printing Office. (T)
- "Nutrition News," National Dairy Council. (T)

First Aid and Safety

- "Bibliography of Elementary Traffic Safety Education and School Patrol Materials," American Automobile Association. (T)
- "Bicycle Riding Clubs," Bicycle Institute of America, Incorporated. (T)
- "Bicycle Safety Quiz," Aetna Casualty and Surety Company. (E)
- "Don't Touch Blasting Caps," Institute of Makers of Explosives. (E)
- "First Aid," Equitable Life Assurance Company. (T)
- "First Aid for the Family," Metropolitan Life Insurance Company. (T)
- "The Safest Route to School," American Automobile Association. (E)

Health Services

- "Health Organizations," National Health Council. (T)
- "How to Choose a Doctor," American Medical Association. (T)
- "Suggested School Health Policies," National Education Association. (T)
- "What's in Your Future, A Career in Health," National Health Council. (T)
- "Your Family Health Record," American Medical Association. (T)

Diseases

- "ABC's of Childhood Diseases," Metropolitan Life Insurance Company. (T)
- "Air Pollution, The Health Effects of," U. S. Department of Health, Education and Welfare. (T)
- "Arthritis," The National Foundation. (T)
- "Birth Defects," The National Foundation. (T)
- "Cancer Facts and Figures," American Cancer Society. (T)
- "Cancer's Seven Danger Signals," American Cancer Society. (T)
- "Childhood Diseases," Prudential Insurance Company. (E)
- "Common Cold," Equitable Life Assurance Company. (T)
- "Common Diseases," Equitable Life Assurance Society of the U.S. (T)
- "Diabetes," Prudential Insurance Company. (T)
- "Diphtheria," U. S. Department of Health, Education and Welfare. (T)
- "Facts about T B," National Tuberculosis Association. (T)
- "Heart Disease in Children," American Heart Association. (T)
- "Hepatitis," U. S. Department of Health, Education and Welfare. (T)
- "Home Care of the Child with Rheumatic Fever," American Heart Association. (T)
- "How You Can Protect Your Child against Rheumatic Fever," American Heart Association. (T)
- "Immunization Schedule," U. S. Department of Health, Education and Welfare. (T)
- "Influenza," U. S. Department of Health, Education and Welfare. (T)
- "Leptospirosis," U. S. Department of Health, Education and Welfare. (T)
- "Let's Teach the Facts about Cancer," American Cancer Society. (T)
- "Measles," U. S. Department of Health, Education and Welfare. (T)
- "101 Questions about the Heart," American Heart Association. (T)
- "Poliomyelitis," U. S. Department of Health, Education and Welfare. (T)
- "Rabies," U. S. Department of Health, Education and Welfare. (T)
- "Should I Smoke," American Cancer Society. (T)

proverb says, "One picture is worth ten thousand words." Laboratory and health experiments can be brought to the classroom quickly and with considerable effectiveness by means of the motion picture and film slide.

EFFICIENCY OF LEARNING. Films that can keep the student's attention tend to save time and energy in learning. At times, the health lecture may go over the head of some pupils. The film helps to maintain the pupils' attention and contributes to the clarification of the topic under consideration. The picture enriches the mind, especially when the pupils can see the film in color, and an accompanying explanation on a sound track adds further understanding.

Suggested Films

Many excellent films on health subjects may be rented. Frequently, state boards of health have film libraries from which individual films can be obtained for a small fee. Another source of rental is the extension division of the state university. Films may also be obtained from such voluntary health organizations as the cancer society, the heart association, the tuberculosis association, the department of motor vehicles, the American Red Cross, insurance companies, and some school systems that have developed audio-visual departments.

Résumés of films are found in the film catalogues produced by several universities throughout the United States. The classroom teacher would find these catalogues most useful in deciding upon the films she would like to see for her own benefit or would like to show to her class. As a partial list, the extension divisions of the following universities have such catalogues available: Indiana University, Bloomington, Indiana; Pennsylvania State University, State College, Pennsylvania; University of Pittsburgh, Pittsburgh, Pennsylvania; University of California, Berkeley, California; Oregon State University, Corvallis, Oregon; University of Washington, Seattle, Washington; University of Florida, Gainesville, Florida; University of North Carolina, Chapel Hill, North Carolina; and the University of Maryland, University Park, Maryland.

An especially good source for keeping up to date on the latest films and film slides produced is the following: *The Educational Media Index*, 250 West 57th Street, New York 19, N. Y. This index should be available in most audio-visual libraries, especially those maintained by colleges and universities and by public health departments.

A selected list of films on health subjects available to the classroom teacher is given below. The films included are all 16 mm. and have sound tracks; brief annotations are included with each film listed. The following code also applies: (T) for use by the classroom teacher; (E) for showing to elementary school children; (C) for color films; (B-W) for black and white films. The films listed are classified by general health units.

For certain of the films listed, the source where they may be obtained

- American Journal of Public Health and Nation's Health*, American Public Health Association, 1790 Broadway, New York 19, N.Y.
- Cancer News*, American Cancer Society, 47 Beaver Street, New York 4, N.Y. (free).
- Child Study*, Child Study Association, 132 E. 74th St., New York 21, N.Y.
- Growth*, Society for the Study of Development and Growth, Kanken Hospital, Research Institute, Fox Chase, Philadelphia 11, Pa.
- Health Bulletin for Teachers*, Metropolitan Life Insurance Company, School Health Bureau, Newark, N.J. (free).
- Journal of Health, Physical Education, and Recreation*, American Association for Health, Physical Education and Recreation, 1201 Sixteenth St., N.W., Washington 6, D.C.
- Journal of School Health*, American School Health Association, 3335 Main St., Buffalo 14, N.Y.
- Journal of the American Medical Association*, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.
- Journal of the National Education Association*, The National Education Association, 1201 Sixteenth St., N.W., Washington 6, D.C.
- Public Health Reports*, Superintendent of Documents, Washington 25, D.C.
- Public Safety*, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.
- Research Quarterly*, American Association for Health, Physical Education and Recreation, 1201 Sixteenth St., N.W., Washington 6, D.C.
- Safety Education*, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.
- Today's Health*, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.
- Western Public Health*, Western Branch, American Public Health Association, School of Public Health, University of California, Berkeley 4, Calif.
- World Health Organization Bulletin*, Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N.Y.

HEALTH FILMS

Visual instruction usually functions as a supplementary aid in making classroom health teaching more effective. A good educative process should elicit keen interest on the part of the pupils; visual aids help to achieve this result. The values of visual aids for elementary school health education follow.

MOTIVATION. Many health educators have come to recognize the motivating effects of motion pictures and film slides in health learning. When the pupil becomes interested in health, this interest may carry him further than he would ordinarily go without such motivation. Children have unlimited curiosity, and this curiosity leads to added interest in the health lesson. Interest through visual aids leads the children to self-activity, and to investigation of further problems in health.

ECONOMY IN LEARNING. The need to conserve learning time has been stressed as most important in the present age. Teaching procedures must not only foster interest in good health practices, but they must be executed with the least possible waste of time and energy. An old Chinese

- "Scrub Game," 30 minutes. (B-W) (E) Skin care and structure.
- "Sleep for Health," 11 minutes. (B-W) (E) Child's responsibility in formation of habits.
- "Soapy the Germ Fighter," 10 minutes. (C) (E) A boy, primary age, learns about cleanliness.
- "Swab Your Choppers," American Dental Association; 16 minutes. (B-W) (E) Animated cartoon illustrating toothbrushing.
- "Teeth Are to Keep," 11 minutes. (C) (E) A cartoon to drive home the essential of tooth care.
- "Your Cleanliness," 10 minutes. (B-W) (E) Importance of cleanliness around the home.
- "Your Posture," 11 minutes. (B-W) (E) Importance of posture to general health.

Nutrition

- "Food that Builds Good Health," 10 minutes. (B-W) (E) Project of raising guinea pigs on a good diet.
- "Foundation Foods," 10 minutes. (C) (E) What to eat for a good diet.
- "Good Eating Habits," 10 minutes. (B-W) (E) Attitude-building film on developing good eating habits.
- "Magic Foods," 10 minutes. (C) (E) A magician uses the basic foods to do his magic.
- "Over the Plate," 17 minutes. (C) (E) Story of baseball and its relationship to health.
- "Story of Human Energy," 10 minutes. (C) (E) Tells the story of the various activities and their needs.
- "Your Food," 16 minutes. (B-W) (E) Importance of correct diet for healthful living.

Safety and First Aid

- "Bicycle Safety," 10 minutes. (B-W) (E) Basic rules of bicycle safety.
- "Bicycling with Complete Safety," 10 minutes. (B-W) (E) Bicycling as a problem in traffic safety. Use of good brakes, etc.
- "50,000 Lives," 14 minutes. (B-W) (E) Explains mouth-to-mouth rescue breathing of artificial respiration.
- "Fire Safety Is Your Problem," 11 minutes. (B-W) (E) Explains the important rules for fire safety at home.
- "How to Call the Fire Department," 5 minutes. (B-W) (E) Explains how to call a fire department in case of emergency.
- "I'm No Fool as a Pedestrian," 18 minutes. (C) (E) Illustrates safe and unsafe pedestrian practices with cartoon animation.
- "Let's Be at Home in the Water," 10 minutes. (C) (E) Safety precautions that should be observed in and near the water.
- "Let's Play Safe," 10 minutes. (C) (E) Playground safety.
- "Let's Stop and Go Safely," 17 minutes. (C) (E) A traffic policeman explains traffic problems to pupils.
- "Motor Mania," 12 minutes. (C) (E) A Disney cartoon on traffic safety.
- "One Day's Poison," 30 minutes. (B-W) (T) Shows work of a poison control center.

is given. For the most part, however, the sources of the films are not listed. The reason for the omission of sources is that the films can usually be rented from well-established audio-visual departments maintained by local or state public health departments, the state department of education, some of the voluntary health organizations, or state or private colleges and universities. Many of these organizations and agencies issue a bibliography of films available that will be sent free to teachers upon request.

Body Functions

- "From Generation to Generation," 30 minutes. (C) (T) Story of human reproduction.
- "Heart and Circulation," 11 minutes. (B-W) (E) Pulmonary and systemic circulatory systems are shown in animation.
- "Hemo, the Magnificent," Bell Telephone Company; 59 minutes. (C) (E) (T) Good for upper elementary school children. Story of the blood.
- "Human Beginning," E. C. Brown Trust, Alder St., Portland, Oregon; 20 minutes. (C) (E) Story of ovulation and fertilization.
- "Human Heredity," E. C. Brown Trust, Alder St., Portland, Oregon; 18 minutes. (C) (E) Biological facts about heredity.
- "Learning about Our Bodies," 11 minutes. (B-W) Study of the muscles and organs of the body.
- "The Story of Menstruation," Kimberly-Clark Corporation; 10 minutes. (B-W) (E) Animated drawings of menstruation; for upper elementary school girls.
- "Work of the Blood," 13 minutes. (C) (E) Blood typing, composition, and functions, especially for upper elementary school children.
- "You and Your Five Senses," 8 minutes. (C) (E) Man's five senses.
- "You, the Human Animal," 8 minutes. (B-W) (E) Jiminy Cricket discusses how man reasons and thinks.

Personal Health Problems

- "Care of the Hair and Nails," 11 minutes. (B-W) (E) Fairy tale which uses magic in helping children learn good habits.
- "Care of the Skin," 11 minutes (B-W) (E) Three children are shown getting ready for bed. Demonstrates hand-washing, etc.
- "Cleanliness and Health," 10 minutes. (B-W) (E) A doctor shows a student the value of cleanliness.
- "Dental Health: How and Why," 10 minutes. (C) (E) Explains a good diet and how to take care of the teeth.
- "Eyes Bright," 10 minutes. (C) (E) School nurse and classroom teacher tell how to protect the eyes.
- "Fun that Builds Good Health," 11 minutes. (B-W) (E) Choices of recreation in terms of good health.
- "Hear Better, Healthy Ears," 11 minutes. (B-W) (E) Animation of the structure of the ear, how to take care of the ears.
- "How Billy Keeps Clean," 10 minutes. (B-W) (E) How boys and girls keep themselves clean.

Emotional Health

- "Angry Boy," 33 minutes. (B-W) (T) Shows the emotional disturbance of a boy who is caught stealing in school. Good resource material for the teacher.
- "Appreciating Our Parents," 10 minutes. (B-W) (E) Family cooperation is presented.
- "Beyond the Shadows," 26 minutes. (B-W) (T) Shows mental retardation as a community problem and causes. Good resource material for the teacher.
- "Breakdown," 41 minutes. (B-W) (T) A young woman's schizophrenic breakdown and how she receives help in her recovery. Good resource material for the teacher.
- "Developing Responsibility," 10 minutes. (B-W) (E) A story of a boy and a dog that he wants very much. Teaches responsibility.
- "Don't Be Afraid," 12 minutes. (C) (E) Designed to aid children in obtaining a basic understanding of fear.
- "Don't Get Angry," 12 minutes. (C) (E) Describes anger as a natural emotion which cannot be entirely avoided but which can be successfully managed in a mature way.
- "Everyday Courtesy," (B-W) (E) Teaches courteous habits of thought and action which should be used every day.
- "Family Circles," 31 minutes. (B-W) (T) Describes the family of former years and compares the family and the present problems that exist today. Good resource material for the teacher.
- "From Sociable Six to Noisy Nine," 22 minutes. (B-W) (T) Describes the behavior that may normally be expected in children from ages 6 to 9. A good resource material for the teacher.
- "From Ten to Twelve," 26 minutes. (B-W) (T) The physical and emotional development of children of these ages and some of their problems.
- "Good Sportsmanship," 10 minutes. (B-W) (E) The values of good sportsmanship are illustrated.
- "Happy Little Hamsters," 13 minutes. (B-W) (E) Shows the patterns of family life of a hamster and helps the understanding of human growth.
- "How Honest Are You?" 13 minutes. (B-W) (E) Describes honesty and how it is applied.
- "How We Cooperate," 10 minutes. (B-W) (E) Pupils learn what cooperation is and its values are described.
- "Human Beginnings," E. C. Brown Trust, Portland, Oregon; 22 minutes. (C) (E) Shows the fundamentals of family life.
- "Principles of Development," 17 minutes. (B-W) (T) Describes the fundamentals of growth and development from early infancy. Also shows the individual differences and attitudes. Good resource material for the teacher.
- "The Other Fellow's Feelings," 8 minutes. (B-W) (E) The problems of teasing and ridicule.
- "The Outsider," 10 minutes. (B-W) (E) Story of a young girl who feels that her school group rejects her and some of the responsibilities of the groups around her.
- "Ways to Settle Disputes," 10 minutes. (B-W) (E) How to bring disputes before the class and how they can be settled.

- "Safe Living at School," 10 minutes. (B-W) (E) Safety features of a school. What the students can do in safety.
- "Safety in the School Bus," 11 minutes. (B-W) (E) Discusses safety problems while on a school bus.
- "Street Safety Is Your Problem," 10 minutes. (B-W) (E) Safety when boys and girls play near the streets.

Disease Prevention

- "Body Defenses against Disease," 10 minutes. (B-W) (E) Animation portraying the body's three lines of defense against infection, the skin, lymph, circulatory.
- "Breast, Self-examination," 16 minutes. (C) (T)
- "How to Catch a Cold," 10 minutes. (B-W) (E) Walt Disney cartoon depicting common sense in fighting a cold.
- "I Never Catch Cold," 10 minutes. (C) (E) Film presents a good health program in action and teaches prevention.
- "Joan Avoids a Cold," 10 minutes. (C) (E) A story of a boy who violated the rules of good health and caught a cold.
- "Let's Have Fewer Colds," 10 minutes. (C) (E) Points out simple practices which can reduce the number of colds.
- "Man Alive," 12 minutes. (C) (E) Animated cartoon worries about a knock in the motor of his car. He learns the importance of seeing a doctor for a diagnosis, especially in cancer symptoms. (Upper elementary school children.)
- "Rodney," 10 minutes. (C) (E) Film is a cartoon dealing with tuberculosis.
- "Story about Dr. Jenner," 10 minutes. (B-W) (E) Life of Dr. Jenner and the discovery of smallpox vaccine.
- "Winged Scourge," 20 minutes. (C) (E) A Walt Disney film dealing with insect control measures for preventing spread of malaria.

Community Health

- "City Water Supply," 11 minutes. (B-W) (E) City's water system Protection of water from pollution.
- "Clean Waters," 21 minutes. (C) (E) The danger of pollution of natural waters.
- "Community Health in Action," 22½ minutes. (B-W) (E) Documentary of a good community health program. (Upper elementary school children.)
- "Insects as Carriers of Disease," 10 minutes. (B-W) (E) Walt Disney cartoon story which presents the fly and mosquito as carriers of dysentery, malaria, and typhus.
- "Mosquito," 10 minutes. (B-W) (E) The life cycle of the mosquito.
- "School Health in Action," 27 minutes. (B-W) (T) Story of a typical city that recognizes its health problems. A teacher solves its problems with the help of community organizations.
- "Why Foods Spoil," 14 minutes. (C) (E) Explains how molds, yeast, and bacteria grow and multiply.
- "Your Health at School," 11 minutes. (C) (E) What the school does to provide a pleasant, clean, and healthful atmosphere. (Upper elementary school children.)

4. Calls upon health resources from various parts of the country when necessary.

Other vital services rendered by the public health department are given below in more detail.

SANITATION. The sanitarians and engineers can help the community to avoid air pollution and water pollution, including water pollution in the rural schools. They help with the sewage problem in the community, including the development of sewage treatment systems. These projects aid the rural schools to better environmental health conditions. These sanitarians help also to:

1. Safeguard food and milk supplies.
2. Check food establishments, such as restaurants and school lunch-rooms, and motels, swimming pools, and trailer camps.
3. Control diseases that may be spread by animals, such as tuberculosis, trichinosis, and Bangs disease.
4. Conduct safety campaigns, including home safety and school safety.
5. Organize campaigns to eradicate pests in the community, such as mosquitoes and rats.
6. Supply health education materials, such as speakers, pamphlets, and films, for use in the community and the schools.

PUBLIC HEALTH NURSING. The public health nurse works with local professional health organizations and the schools in order to maintain good health in the community. The nurse helps with the school health instruction program by providing health content materials and by acting as a health resource person on special health topics or problems.

She may also help the schools in conducting health examinations and in the health screening of the pupils. She may visit the homes of the children in order to interpret the health findings of these examinations and to seek the correction of remediable defects and the alleviation of other atypical health conditions found among the children at school.

VITAL STATISTICS. The public health department records births, deaths, and the causes of certain diseases. Their statisticians analyze these data and can identify trends in the over-all health picture of the community. They keep the physicians and other personnel informed of changes in the health status of the community. Teachers can visualize their health picture of their community by studying these reports. As a consequence, they are better able to place more emphasis on the preventive aspects in their health teaching in the schools.

OCCUPATIONAL HEALTH. Public health departments cooperate with local businesses to reduce illnesses and job accidents. Sometimes they participate in promoting occupational health services in industries with established medical programs; this is done by consultation, by conducting surveys, and by investigation of health hazards. They promote the well-being of workers through health education programs.

Professional Films for Teachers

- "Broader Concepts of Curriculum," McGraw-Hill Book Company, Inc.; 21 minutes. Describes the responsibility of the school in developing competencies in various areas, including family living, health, and physical fitness.
- "Community Resources in Teaching," Iowa State University; 20 minutes. Describes techniques of obtaining resources of a community. Describes field trips.
- "Hickory Stick," National Education Association; 28 minutes. Describes the procedures of a fifth-grade teacher in solving behavior problems in her class.
- "How We Learn," Coronet; 10 minutes. Describes basic principles of learning.
- "Individual Differences," McGraw-Hill Book Company, Inc.; 20 minutes. Case history of a child, showing how the teacher helps the pupil in her classroom.
- "New Tools for Learning," Encyclopaedia Britannica film; 19 minutes. The values of audio-visual materials are described and procedures for using them explained.
- "Our Community," Encyclopaedia Britannica film; 12 minutes. Shows the community life and how the people depend upon each other.
- "Promoting Pupil Adjustment," McGraw-Hill Book Company, Inc.; 20 minutes. The teacher's role in the classroom in seeing and helping pupils with problems.
- "Planning for Personal and Professional Growth," McGraw-Hill Book Company, Inc.; 18 minutes. Adjustments by teachers to teaching. Plans for professional growth.
- "Schools and the Community," McGraw-Hill Book Company, Inc.; 25 minutes. Demonstrates the role of the schools in communities throughout the country.

COMMUNITY HEALTH RESOURCES

Teachers and other personnel interested in health for the schools can check on the organized health resources in their own communities. A first step is to get acquainted with the local professional health groups, such as doctors, dentists, and the hospital, in one's particular area. The second step is to contact the voluntary health organizations in the community and learn more about the health services that they render to the community.

The next agency to approach is the local public health department. This department is charged with the responsibility of protecting and promoting the health of the entire community. Its health staff works with the local doctors, dentists, and other community groups. This agency typically performs the following services:

1. Provides services protecting the community's health.
2. Gathers health facts and plans for health improvements.
3. Provides health education materials which are available to the schools.

4. Calls upon health resources from various parts of the country when necessary.

Other vital services rendered by the public health department are given below in more detail.

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HEALTH EDUCATION. Health education is the focal point for a wide variety of educational programs carried out by the public health department. This agency provides materials and health information for the newspapers and for television and radio programs. It also provides films, slides, pamphlets, posters, and many other aids to help the schools and others in the community in their efforts to improve health understandings.

OTHER COMMUNITY HEALTH RESOURCES

A number of other community health resources will be mentioned briefly below.

COUNTY WELFARE AGENCIES. County welfare agencies can assist needy persons who require the attention of a doctor or dentist or need hospitalization. Teachers should check the county welfare director for further information.

CRIPPLED CHILDREN'S SERVICES. The diagnosis and treatment for crippled children may be provided through public health and welfare departments. Some states provide a separate department which deals with the crippled children's problems.

COMMUNITY AND CIVIC ORGANIZATIONS. These organizations help children with special health problems. They also assist with the health education program in the schools and with other essential community health needs. These organizations are:

- | | |
|-------------------------------|-----------------------------------|
| 1. Parent-Teacher Association | 6. Farm organizations |
| 2. Women's clubs | 7. Home demonstration clubs |
| 3. Service clubs | 8. Voluntary health organizations |
| 4. Lodges | 9. Medical auxiliary groups |
| 5. 4-H Club | |

SUMMARY

Good teaching necessitates a sound organizational plan based on the interests and needs of pupils. The health teaching should be stimulating and meaningful to the students. The health experiences provided should lead the pupils to good health habits, and these habits should carry over into adult life.

The selection of health teaching methods should be based upon the following criteria: (1) The techniques should be suitable to the maturity of the grade level of the pupils. (2) The techniques should be judged and guided by the health education objectives established. (3) The presentation should be interesting and appealing to the pupils. (4) The teachers should have a fundamental knowledge of health content in the various areas of health.

The health teaching methods that teachers can use in the classroom are: buzz sessions, brainstorming, debate, field trips, oral reports, health demonstrations, problem-solving, discussions, sociodrama, and the use of guest speakers.

The health textbooks available for the elementary school grades should be evaluated by a textbook committee as to their usefulness and their scientific accuracy. Many states publish a list of textbooks for use in the schools which have been evaluated and approved by a textbook committee appointed by the state department of education.

The teacher today has many resource materials to use in the classroom to supplement her health teaching. Such materials for use are motion pictures, slide films, pamphlets, exhibits, field trips, and guest speakers from health organizations located in the community.

There are many professional health organizations in the community which the teacher can contact for help and information on the various health problems. Some of these organizations are: American Cancer Society, Tuberculosis Association, American Heart Association, National Foundation, medical and dental societies, American Red Cross, local traffic safety organizations, local police department, universities and colleges, and the local public health department.

Many states issue bulletins and handbooks describing the films and health pamphlets that are available for use in the public schools. If the state department of education does not issue such materials, the local health department and the state public health department usually publish a booklet describing their free health materials and films for use in the community and public schools.

The public health department's organization is a good source of health advice through their various sections, such as vital statistics, health education, sanitation, and nursing. The teacher can get all the health assistance that she requests from these health sections in her own community or state. These organizations are eager to aid in the school health program.

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- Bernard, Harold W., *Mental Hygiene for Classroom Teachers*. New York: McGraw-Hill Book Company, Inc., 1961.
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Chapter

6

Healthful School Environment

THE COMFORT AND HEALTH of the pupils, teachers, and other personnel are affected by the school environment. The atmosphere of the school contributes to the health of boys and girls, improves their social and emotional adjustments, and stimulates the learning process. Local school boards have a distinct responsibility to provide a healthful school environment as an essential aid to the growth and education of elementary school children. Environmental standards to promote safety, to provide good sanitation, and to allow for comfort in the classroom situation are vital for effective learning and healthful living.

Sanitary standards for schools are usually developed by state public health departments; these are then available through local public health departments. State and local public health departments cooperate with local school boards, helping them with school sanitation problems. Besides the health department, the fire department, other municipal services, and various voluntary agencies in the community can be called upon by the schools to assist them in developing procedures and standards for healthful and enjoyable school living.

Among the factors that should be considered when establishing criteria for a healthful school environment are the following:

1. Adequate and safe water supply for all purposes.
2. Ample and sanitary washing and toilet facilities.
3. Safe and adequate sewage disposal system.
4. Safe and sanitary lunchroom, including kitchen and dishwashing equipment and facilities.
5. Proper heating, lighting, and ventilation.
6. Modern and adjustable seats and desks for the classrooms.

7. Provision for physical education and recreation activities.
8. Nurse's office and first-aid room.

THE SCHOOL LUNCH PROGRAM

An adequate school lunch program can contribute directly to the health and well-being of the school child. To a large extent, also, the school lunch program provides an opportunity to apply much of the information gained through the health instruction phase of the elementary school curriculum. When its full educational possibilities are realized, this program can contribute to the conviction that health is a way of being.

It is recommended that growing boys and girls have approximately one-third of their daily food requirement at noontime. Under this principle, the school lunch program takes on added importance, since, without it, the nutrition needs of these pupils are not adequately met. Also, poor eating habits are commonly found at all economic levels; thus, balanced noon meals at school for all elementary school children have further significance. Essential to this process is good lunch supervision.

Administration

Responsibility for initiating the school lunch program, for providing adequate facilities and equipment, and for securing adequate personnel must definitely be lodged with the school board and, through it, with the administrative staff. The administration should make appropriate arrangements to see to it that the school lunch becomes a functional part of the total school day.

Usually, the administrator appoints one person in the school to coordinate the lunch program. This person is frequently called the "health coordinator." However, success in operating this program depends not only on the administrator and the coordinator, but also upon the active support of the classroom teachers, public health personnel, parents, and pupils. The program should, of course, provide for those children who bring lunches from their homes to school as well as for those who utilize the cafeteria services.

The adequacy of the school lunch program should be evaluated periodically. A check list for this purpose has been prepared by the New York State Department of Education, as shown in Table 6.1. An examination of this check list will also indicate good practices to be observed in the lunchroom and cafeteria.¹

¹ New York State Department of Education, *Inspection and Supervision of the Health Aspects of the School Plant* (Albany, N.Y.: State Department of Education, 1955), p. 11.

TABLE 6.1
Lunchrooms and Cafeterias
New York State Check List

Question	Yes	No
1. Is a complete meal available in attractive form with guidance in selection of food and eating practices?		
2. Is provision made for preparing and serving at least one hot dish for children who eat their noonday meal at school?		
3. Is a clean, well-lighted, well-ventilated lunchroom, classroom, or other room provided in which children can eat their noon lunch?		
4. Do kitchen, dining room, and furnishings serve as a model to good housekeeping?		
5. Is sufficient time provided for children to eat a leisurely and adequate meal?		
6. Are school lunchrooms properly screened and free from flies?		
7. Are all utensils properly washed and sterilized?		
8. Are paper napkins provided for all?		
9. Is milk pasteurized and served from individual containers?		
10. Is all garbage properly disposed of in a sanitary manner?		
11. Are hand-washing facilities (warm water, soap, and paper towels) available to pupils before eating and is time scheduled for hand-washing?		

Sanitation

A clean storage space should be provided for the children's lunch boxes. Where food is stored and prepared, such operations should conform to the public health laws set up by the health department of each state. The teacher can obtain copies of these rules and regulations by contacting her local or state public health department.

Administrators can obtain a great deal of help from the local public health sanitarians. These sanitarians have specific check lists to use in checking the sanitation of all food establishments, including those in schools.

Home-packed School Lunch Study²

Should the home and school cooperate to improve the home-packed lunch? It is almost gratuitous to say that the primary responsibility for

²William R. Manning and Lionel R. Olsen, "Home and School Cooperate to Enrich the Home-Packed School Lunch," *Journal of School Health*, 32, No. 3 (March 1962), 87.

the child's nutritional status rests with the parents; nevertheless, the school can assist parents with this problem.

The Greater Petaluma, California, Area School Health Council worked cooperatively to upgrade the quality of the home-packed school lunch. P.T.A. groups within the area canvassed their membership, using the following query in the form of an open-ended questionnaire: "What are the main nutritional problems you have in planning your family's home-packed school lunches?"

The Council developed a simple "guideline" booklet containing suggestions to help parents prepare school lunches that were nutritious as well as varied and appetizing. The following suggested menu was proposed:

Protein-rich Foods

Sandwich fillings Egg salad, ham, cheese, liverwurst, tuna fish.

Soup Chicken, split pea, vegetable, and tomato.

Others Deviled eggs, baked beans, walnuts.

Vegetables and Fruits

Vegetables Celery, carrots, turnip slices, tomato

Fruits Apples, pears, oranges, berries

Fruit juices Pineapple, orange, grape, apple.

Breads and Cereals

Breads Whole wheat, rye, enriched white, raisin.

Cereals and crackers: Individual-packed dry cereal, graham, rye, and crisp crackers.

Cookies and cake: Oatmeal, raisin, and peanut butter cookies; home-made cake.

Milk Products Milk, creamed soup, cottage cheese, powdered milk added to sandwich mixtures, buttermilk.

The work of the Greater Petaluma Area School Health Council resulted in more than the preparation of a useful guide. Considerable stress was laid upon the necessity for the daily attention of parents to their children's lunch needs and the variety of nutritional possibilities inherent in the home-packed school lunch. This led to good home-school cooperation, which, in turn, developed worthwhile habits.

Food Sanitation

The local public health department has the responsibility for protecting the public's health against food contamination. This includes regulation and enforcement of minimum sanitary food standards, supervision of food establishments, and keeping up with the new techniques of freezing foods and radiation.

The staphylococci and salmonella germs produce rapidly in food; thus, "food poisoning" can become prevalent if food is not handled and processed correctly. Other diseases that can be spread by food are typhoid fever and amoebic dysentery. Many of these germs can multiply rapidly if utensils and dishes are not correctly sterilized.

Nine rules³ to follow for keeping food safe are:

1. Keep cold foods cold—hot foods hot. Don't let foods stand at room temperature. (Above 140° F. hot and below 40° F. cold.)
2. Keep hands clean, and touch food with hands as little as possible.
3. Do not let anyone who has a skin infection or a cold handle food.
4. Keep kitchens and dining rooms free from flies and other insects.
5. Protect food from sneezes and dust.
6. Be sure that poisons are well labeled and kept away from the place where food is prepared.
7. Wash dishes, glasses, and silver by methods recommended by your local health department.
8. Wash fruits and vegetables carefully.
9. Do not keep fruit juices in galvanized containers.

Food Refrigeration

If food is not refrigerated as soon as possible, it may result in the spread of infection and may cause outbreaks of food poisoning. The following rules apply to food refrigeration:

1. All perishable protein foods, such as poultry, meat, and fish, cream pies, and custard should be kept under refrigeration.
2. All pre-cooked or left-over foods should be refrigerated promptly.
3. Milk and milk products must be kept under refrigeration.
4. The refrigerator should be under 50° F. Use a thermometer and check frequently.
5. All food should be kept covered in the refrigerator.
6. Space should be left between stored food to allow circulation of air.
7. The refrigerator should be kept clean.
8. Defrost the refrigerator in accordance with the manufacturer's instructions.

Cleaning Utensils and Equipment

Sanitary guides for cleaning kitchen utensils and equipment are as follows:

1. All kitchen facilities, including counters, shelves, tables, refrigerators, and sinks, should be so constructed as to be easily cleaned and easily kept in good repair.
2. All equipment, including utensils, should be kept clean and free from dirt, insects, and other contaminating material.
3. After cleaning and giving a clear rinse water, utensils should be given bactericidal immersions as follows (check with a public health sanitarian for details):

³ Jack Smolensky and Franklin B. Haar, *Principles of Community Health* (Philadelphia: W. B. Saunders Company, 1961), p. 211.

(a) Two minutes in a lukewarm chlorine bath (100 parts per million by weight of available chlorine).

(b) Two minutes in approved quaternary ammonium bath containing 200 parts per million as determined by a suitable field test.

(c) Two minutes in an approved iodine-type sanitizer bath containing 25 parts per million as determined by a suitable field test.

Food Handlers and Employees

All employees who come in contact with or handle food in the school cafeteria and kitchen should wear clean clothes, including hair nets or caps. Hands should be kept clean at all times. Every employee should be free from communicable disease; some states demand a tuberculin skin test or chest X ray before the person is allowed to work handling food.

Adequate dressing rooms and lockers should be provided for the employees. All soiled linens, coats, aprons, and so forth, should be placed in special containers when discarded. Every school lunchroom should have adequate and conveniently located toilet facilities for its employees. These should be kept clean, ventilated, and well lighted.

Nowhere in the school environment is *sanitation* more important than in the lunchroom. Absolute cleanliness is essential because of the immediate harm that can result from contaminated, spoiled, or infected food. The close cooperation of lunchroom personnel, school administrators, classroom teachers, and local public health officials is necessary to maintain desirable health standards of sanitation in the elementary schools.

SCHOOL SANITATION

In many states, minimum school sanitation standards have been established for their schools by the state department of education and the state board of health. Local school administrators, health educators, and classroom teachers should secure copies of these standards in those states where they exist. Additional sanitary consulting services may be obtained from these same sources. Further assistance with sanitary problems may be sought from departments of education and departments of health education in many colleges and universities in the various states.

School Site

The school site should be easily accessible, and should be free from excessive motor traffic and from excessive industrial noise, odors, smoke, and dust. The location should be of adequate size for the buildings, playgrounds and parking facilities. The play area should contain at least five acres for each elementary school or 100 square feet of play space per child in the elementary school. Future expansion plans also should be considered. Drainage and water supply should be available. The sanitarian of the public health department is trained to test the soil, drainage, and water supply.

Water Supply

Schools should be provided with safe and potable water, either from the county, the city, or a private water supply. Wherever obtained, the water supply should be inspected by the public health department; this should be done before the opening of each school year and otherwise upon request of local school officials. The majority of states have laws vesting authority for making and enforcing regulations governing the quality of public water supplies in the state boards of health. The school should check these regulations.

In the elementary school, there should be one drinking fountain for each 75 pupils. These should be from 23 to 29 inches in height; the nozzle should be located above the rim of the bowl. A check list indicating good practice in the provision of drinking facilities in the elementary school is presented in Table 6.2; this check list was prepared by the New York State Department of Education.⁴

The plumbing codes of communities usually insist that cross-connections in the school plumbing system should not occur; and that back siphonage be limited to the main arteries that carry water into the schools and homes of the community.

TABLE 6.2
Check List for Drinking Facilities

Question	Yes	No
1. Is source of water supply inspected by local health authorities and the water analyzed if so ordered by the health officer?		
2. Is there a fountain for every 75 children?		
3. Are fountains of proper height for use by all children? (Primary, 24"; upper elementary, 28")		
4. Are drinking fountains conveniently located? To primary rooms, gyms, health suite, playgrounds?		
5. Are fountains kept in a sanitary condition?		
6. Are children learning to use fountains properly?		
7. Are sufficient paper cups provided where there are no fountains?		

Rural Water Supplies

The sources of rural water supply are much different from those for urban communities. Usually, water in rural areas is supplied by simple, shallow, and unprotected wells. Some communities have seen a rise in infectious hepatitis because shallow wells have become polluted by bad sewage disposal systems and ineffective septic tanks of individual homes.

Driven wells should be carefully protected against polluted water that may work down the sides of the pipe in the well. The well should

⁴ New York State Department of Education, *op. cit.*, p. 6.

(a) Two minutes in a lukewarm chlorine bath (100 parts per million by weight of available chlorine).

(b) Two minutes in approved quaternary ammonium bath containing 200 parts per million as determined by a suitable field test.

(c) Two minutes in an approved iodine-type sanitizer bath containing 25 parts per million as determined by a suitable field test.

Food Handlers and Employees

All employees who come in contact with or handle food in the school cafeteria and kitchen should wear clean clothes, including hair nets or caps. Hands should be kept clean at all times. Every employee should be free from communicable disease; some states demand a tuberculin skin test or chest X ray before the person is allowed to work handling food.

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Driven wells should be carefully protected against polluted water that may work down the sides of the pipe in the well. The well should

⁴ New York State Department of Education, *op. cit.*, p. 6.

have a heavy top, securely bolted to prevent loosening of the joints. The ground around the walls should slope away from the well, and the area around the well should be kept clean. The rural school administrator can seek help from the local or county sanitarian of the public health department. Many public health departments have standards for drilling wells and have instructions for their construction.

Water pollution is dangerous when discharges from the human body get into the water. The organisms from the human body are known as "colon bacilli"; these are generally grouped together and called the "coliforms." Coliforms are always present in human feces; their presence in the water supply usually indicates contamination. The laboratory technician of the public health department can test the water for such pollution.

Some of the most common water-borne diseases from polluted water are typhoid fever, paratyphoid fever, amoebic and bacillary dysentery, gastroenteritis, infectious hepatitis, schistosomiasis, and Asiatic cholera.

Toilets and Toilet Rooms

The toilet rooms should be properly equipped, clean, and well ventilated. Flush toilets and hot and cold water for washing of hands should be provided. Facilities in the following ratios are recommended as a minimum standard:

Girls' toilets: 1 to 30 girls

Boys' toilets: 1 to 60 boys

Urinals: 1 to 30 boys

Additional facilities should be properly located and accessible to playgrounds, cafeterias, gymnasiums, and auditoriums.

All plumbing installations should conform to the state plumbing code. Check with the local and state public health departments.

Sewage and Refuse Disposal

The sanitary system of sewage disposal should be provided either by a city sewer system or by a system of a type approved by the state health department.

Sewage is the liquid conveyed by a sewer. The term *sanitary sewage* is that which originates in the sanitary conveniences of a house, school, building, or factory. *Industrial waste* is a liquid waste from an industrial process, dyeing, or paper wastes. *Storm sewage* is a liquid flowing into the sewers following rainstorms.

The collection and disposal of refuse is a proper community function, which is controlled by the officials of the public health department. The schools work cooperatively with the various official departments in the city or county that aid in developing plans for the schools.

In some communities, the school and community contract with a private concern that gathers the refuse. Whatever method of refuse

collection and disposal is used, it should be controlled by the health department in order to meet the necessary standards for the health protection of the community and the schools.

FIRE PRECAUTIONS

The doors of the school building, both inside and outside, should open outwardly. The outside exit doors should be equipped with approved panic bolts wherever the exit is used by more than a single classroom. Fire escapes, exits, fire extinguishers, and fire alarms should conform to the regulations of the state fire marshal's office.

Every school should develop rules and regulations concerning fire prevention education, such as those listed below.

1. Fulfill all legal requirements established by the state department of education.

2. Develop rules and regulations governing the use of the school buildings.

3. Provide an instructional program in fire safety.

4. Have periodic inspection of all heating equipment, fire extinguishers, and electrical and mechanical equipment.

5. Provide storage space for trash, rubbish, oily rags, and other refuse which could ignite.

6. Utilize fire-resistive construction whenever possible in building or remodeling. Also, provide fire extinguishers, safe heating equipment, proper exits, good electrical installations, fire alarms, and automatic sprinklers.

7. Locate school buildings an adequate distance from hazardous buildings.

Fire Drills

Suggestions which schools can use in providing for and conducting fire drills are as follows:

1. The fire drill should be so organized that the local fire department would be warned immediately at the first sign of fire or smoke.

2. Fire drills should be held regularly during the school year. If the building has fire escapes, the drills should use these escapes.

3. Fire drills should be scheduled without warning so that everyone takes these drills seriously.

4. Fire drills should be an educational experience. Thus, the children should understand their importance and their seriousness.

5. All personnel in the school should leave the building during these fire drills.

6. Provision should be made to assist handicapped pupils so that the school can be evacuated readily during fire drills.

7. An opportunity for roll call should be provided upon the com-

TABLE 6.3
Recommended Immunizations
U.S. Public Health Service

Diseases	Time of Inoculations	Boosters
Diphtheria	Inoculate as early as 2 months of age.	Booster—one at 1 year, one entering school.
Whooping cough	Series: 3 injections one month apart.	Tetanus, every 4 years.
Tetanus		
Polio	Salk—after 2 months, injections a month apart. A fourth, 7-12 months later. Sabin—(oral).	Booster—entering school.
Smallpox	Vaccination—after 3 months and before 1 year of age.	Revaccination before entering school. Booster every 3 years.
Influenza	Any age past 3 months. Series: 2 shots one month apart for persons exposed to flu in their work.	Annually for persons exposed or endangered.
German measles	Series: 1 shot of gamma globulin for pregnant women exposed to German measles, in first 4 months of pregnancy.	None, unless exposed in another pregnancy.
Infectious hepatitis	One shot of gamma globulin if recommended by physician for persons exposed.	None.
Typhoid	After 3 months. Series: 3 shots 1 to 4 weeks apart. For persons taking trips where water supply is questionable.	One shot every 3 years if visiting or living in typhoid area.
Tuberculosis	After 3 months. Series: 1 shot BCG vaccine for selected persons unavoidably exposed to continuous contact with T.B.	As recommended by the family physician.
Rabies	Any age. Series: Up to 14 injections after being bitten by a rabid animal or one suspected of being rabid.	Booster, if remaining in fever area for prolonged period.
Cholera	After age 6 months. Series: 2 shots 7 to 10 days apart if traveling to cholera area.	Boosters 4 to 6 months apart if living in cholera area. After 4 years, repeat immunization.

Parents should provide the school with the *immunization records* of their children. This information should be placed on each child's permanent health record card. The school nurse may also help with these records.

Parents should carefully observe their children each day before they leave for school in order to detect any signs or symptoms of illness. If found, they should be kept home as a protection to other children, as well as for their own well-being. Parents should inform the school of the reason for these absences. The local health department should be notified by the family physician in the event the child has a communicable disease.

Some parents understand the use of the Shick test and the tuberculin skin test. Some communities and schools use the tuberculin skin test as a screening device to detect children suspected of tuberculosis. Positive reactors are given or advised to get chest X rays and see their physicians.

As a *concise aid to the classroom teacher in her efforts at communicable disease control*, Table 6.4 is presented. This communicable disease summary was prepared by the Oregon State Board of Health.

CARE OF THE SICK AND INJURED

The school should have a specified policy for taking care of emergency illness or accidents that may happen in the school. The school is responsible for the emergency care of accidents and sudden illness, but it should not be responsible for any type of diagnosis or treatment. It is essential that each school have some of its personnel trained in first aid and certified by the American Red Cross. The school's well-written plan should include intelligent action in emergencies, prevention of the spread of communicable disease, a system of notifying parents, and methods of transporting injured or sick pupils.

In order to notify parents in case of an emergency involving their child, the teacher, or some other responsible person in the school, should have the following information about each pupil: (1) name, address, and telephone number of parents for home and business, (2) telephone number of a neighbor who has agreed to call parent when there is no phone in the home, (3) name, address, and telephone number of relative or friend who will accept responsibility for the child when parents cannot be reached, (4) names, addresses, and telephone numbers of home doctor and dentist, (5) hospital or clinic to which pupil may be sent when no one can be reached in extreme emergency, and (6) written authorization from parents granting the school the *right to take needed emergency action in the absence of a parent or other authorized person*.

The teacher should keep a record of all accidents on a "Standard Accident Report Form."

Transporting Pupils

When a pupil meets with an emergency illness or accident at school, a parent should be called and, if at all possible, he should come to the school and transport the pupil to his home. However, if the parent cannot provide transportation, the child should be transported by a responsible adult. The nurse may accompany the pupil, if one is available at the time. If private cars are sanctioned for use, the school should be sure that the correct type of liability insurance is carried by the owner. The policy should be sanctioned by the administrator of the school. The school administrator should have a school policy on this matter, and all teachers should know about these in order to be consistent in their practices.

SCHOOL BUILDING SERVICES

The school buildings should be adequate in size and arrangement for the number of pupils enrolled and for the type of education the community wishes to furnish for its future citizens. They should be so constructed as to provide a healthful and safe environment for the pupils and teaching personnel. They should follow the minimum specified standards as set up by the school board and the state department of education.

Lighting

The health of the pupil depends a great deal on the lighting of the rooms. The reflectivity of the various surfaces in the room have an effect upon the eye health of the pupils. There should be approximately 30 foot-candles in all parts of the class and study rooms, about 50 foot-candles in shops, sewing rooms, and the like, and about 10 foot-candles in the hallways, locker rooms, and toilets. The teacher can frequently borrow a light meter from a nearby electric company to measure the foot-candles in her own classroom and to make comparisons with the recommended minimum standards.

The glare in the room should be checked and controlled. The light fixtures should not give off glare. Usually, bad and dirty fixtures reduce the amount of light from 25 to 50 per cent. The windows of the classroom should be kept clean to admit all the light possible. Teachers can use the check list in Table 6.5 in evaluating the lighting in their rooms.*

* New York State Department of Education, *op. cit.*, p. 7.

TABLE 65
Classroom Lighting
New York State Check List

Question	Yes	No
1. Are double, light-colored, translucent shades provided, and are they in good working condition?		
2. Are seats arranged so that children do not face windows or other light sources?		
3. Are natural and artificial lighting sufficient to provide at least <i>minimum standards of illumination</i> ?		
4. Is lighting equipment inspected and cleaned frequently so that dust does not impair efficiency of artificial lighting?		

Classrooms

The classrooms should have about 32 to 36 square feet of floor space per child; 30 square feet per person should be the minimum. Usually, this is about equivalent to 1000 square feet of space per classroom, not including the toilet, storage space, and cloakroom.

The ceiling surface and down to about three feet from the ceiling should be painted a flat white for adequate light reflection. The woodwork and space around the windows should have the same flat white surface. The walls should be finished with a light pastel color with a dull finish. The floors should be painted a light color.

The floors themselves should be sound resistant. Oil should never be used on the floors, as it makes them hard to clean. Further, this practice could result in a fire hazard.

Ventilation and Heating

This phase of schoolroom health consists of providing a comfortable temperature with natural or moderate humidity, of supplying a sufficient quantity of outside air, of avoiding an accumulation of unpleasant odors, and of preventing overheating of rooms exposed to the sun. Objectionable drafts should also be avoided.

Satisfactory school temperatures consist of the following: 68° to 70° F. in classrooms, toilets, and assembly rooms; 60° to 65° F. in gymnasiums, shops, playrooms, and halls. An outside air supply of 10 to 15 cubic feet per minute per pupil is sufficient to keep odors within acceptable limits.

Automatic regulation of radiators and convectors helps to control overheating. Automatic temperature control is required by some state codes and some local school boards.

In order to reduce discomfort due to drafts, air movement should be

kept below 40 feet per minute; the vertical distribution of temperature should not exceed $1\frac{1}{2}^{\circ}$ F. per foot of height. The kind of heating systems used in today's schools are usually regulated by state and local codes. The most common systems are: (1) jacketed space heaters with natural ventilation, (2) direct radiators or convectors, with window air supply and gravity or fan exhaust, and (3) classroom unit ventilators, with gravity, mechanical, or corridor exhaust.

LEGAL ASPECTS OF ACCIDENTS

Since the program of today's schools includes such activities as physical education, sports, recreation, shops, bus transportation, and many others, the chances for accidents in and around the school building and grounds are much greater than formerly. As a consequence, legal liability for accidents resulting in injuries is occasionally raised and, at times, is settled in a court of law. Thus, it is well for the classroom teacher to understand the legal aspects of accidents.

"Negligence" is the basic reason for legal recourse growing out of an accident occurring during a school-sponsored activity. Each person or teacher has the duty to act in a given situation as a reasonable and prudent person would act under the same or similar circumstances.¹ A person is negligent when he fails in this duty, causing injury to person or property.

Generally, in court actions, legal counsels concern themselves with analyzing the following:

1. What are the duties of those held responsible or negligent for the particular act that resulted in the complaint?
2. What constitutes the breach of these duties?
3. Was the injury or claim for damages brought about as a result of any of these breaches in duty?
4. Was there an unreasonable hazard involved?
5. Was this act or situation foreseeable?

The elementary school classroom teacher may well check with the local school authorities on the status of accident problems in her school and school system. Does the school carry liability insurance for its teachers? Check to see if the schools have written rules and regulations governing pupil conduct on the playground and in playrooms. Are all these activities supervised adequately? Does your school or school system have a published set of safety regulations for use in the schools?

The safety program in the school should be coordinated by a specialist trained in this area. Some schools have a safety committee that sets up

¹ Lawrence E. Houston, "Legal Aspects of Safety in School Recreation," *Annual Safety Education Review* (Washington: American Association for Health, Physical Education and Recreation, 1962), p. 57.

standards and makes suggestions for use in the public schools. Safety is everybody's business in the public schools.

HEALTHFUL EMOTIONAL CLIMATE

Mental health may be defined as a state of well-feeling which so completely encompasses the individual that it spills over and pervades his environment, making the neighborhood of that person a good place in which to live. Mental health is the end product of total experience. For the child, the elementary school is an important aspect of his life.

The Teacher

The teachers and other school personnel should place emphasis on the preventive aspects of the unwholesome personality rather than upon the curative aspects. The classroom teacher is regarded as the first line of defense in the classroom observation of the behavior of her pupils. Characteristics such as withdrawal from group activities in the classroom or on the playground can cause the enlightened teacher concern about such pupils under her supervision.

The teacher can help her pupils in the realm of emotional adjustment by following these suggestions:

1. Observe and record specific alterations in behavior—particularly those which might be due to physical defects.

2. Give more security and help to the aggressive or shy child, and guidance to the unruly child.

3. Counsel with the parents about the child's behavior.

4. Obtain help from community resources for emotional aid in individual cases. Usually the schools employ aid from the various agencies in the community and state.

5. Observe in your pupils the "inability to learn." This is a significant factor, which may lead to an emotional handicap. The child uses all his energy fighting an emotional turmoil.

6. Observe the child who is unhappy or in a state of depression. A child who is unhappy usually will express it through his work.

7. Observe the child who develops a physical feeling of illness associated with schoolwork and problems. Sometimes this feeling may affect his speech, cause pains, and so forth, for no physical reason.

Every person who comes in contact with the elementary school child, in the home, in the school, and in the community, has some degree of influence upon the mental health of that child. The teachers are in an important position to assist children in gaining good mental health. Good mental health is so closely allied to good teaching that it becomes nearly impossible sometimes to separate the two.

The general spirit and tone of the school is a factor of great importance when good learning takes place. Children, teachers, bus drivers, cus-

All nonteaching personnel should also meet minimum health standards for working in the schools. They should be free from communicable disease. They should like to work with children. They should fit in with the philosophy of the school. These personnel should also be morally and emotionally fit.

SUMMARY

The comfort and health of pupils, teachers, and all other personnel are affected by the school environment. In a healthful environment, not only is their physical well-being enhanced, but the learning process is exhilarated. The local school board has the responsibility to provide this healthful school environment. This chapter has been devoted to indicating the features of such conditions

A healthful school environment includes the following factors: good and safe water supply; ample toilet and washing facilities; adequate sewage disposal, sanitary lunchroom facilities and accessories; proper ventilation, heating, and lighting; adjustable seats and desks; physical education and recreation facilities; and adequate first-aid equipment, supplies, and facilities.

The school noon lunch provides an environmental problem of considerable proportions. The preparation and serving of food and the dishwashing process following the lunch, obviously, must be regulated by the strictest sanitary code. These practices must meet the standards established by local and state public health departments. Sanitarians from these departments will cooperate with the schools in evaluating all sanitary situations and will give expert advice on ways to meet minimum sanitary standards.

Every school should take the necessary steps to make the school building safe from fire. Rules and regulations concerning fire prevention should be established. There should be periodic inspection of all heating equipment, fire extinguishers, and electrical and mechanical equipment. There should be regular fire drills in the schools, supervised by teachers and administrators.

The classroom teacher is in an excellent position to aid and promote the control of communicable diseases. Through classroom observations of her pupils, she can detect deviations from a pupil's normal appearance and behavior that may indicate the onset of a communicable disease. Teachers need fundamental information as to the nature of communicable disease.

Every person in the school who comes into contact with the elementary child has some degree of influence upon the mental health of that child. Teachers are in especially good position to assist children in gaining good mental health. Good mental health is so closely allied to good

teaching that it becomes nearly impossible sometimes to separate the two. The stress and strain of modern living affects children. The school environment should be a wholesome place for living and learning. The teacher can help the children adjust to those changing conditions affecting life's problems.

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Part Three



Physical Education

Chapter

7

The Physical Education Program

As was presented in Chapter 1, physical education can contribute to the education of elementary school boys and girls in various ways. These include activities for the improvement of physical fitness, development of motor skills, experiences for the enhancement of social efficiency, and teaching of special skills for desirable leisure-time use. The nature of the physical education program for the realization of these objectives will be considered in this chapter.

COMPREHENSIVE APPROACH TO OBJECTIVES

The elementary school teacher will readily recognize that her class-work varies in accordance with the specific objectives she has in mind at a given time. For example, reading comprehension requires one approach, while the increase of vocabulary would call for a different one. At no time would she attempt to realize all purposes with a single approach. True, the various approaches are not mutually exclusive, as one may contribute to another in the same manner that an improved vocabulary contributes to reading comprehension.

The same situation holds true for physical education. Each of the objectives of physical education demands a planned approach. Thus, there are fundamental differences in logical procedures for the realization of each objective of physical education; in fact, these differences exist in relation to the various aspects composing each objective. While many physical education activities can be utilized for more than one purpose, *no single activity can contribute equally well to all objectives; and the manner in which the activity is presented will vary according to the purposes sought by its use. This point of view will be illustrated with three activities.*

Conditioning exercises can be used effectively to increase muscular strength and muscular endurance, although for each of these purposes the manner of their use varies. By special selection, arrangement, and utilization, they may even affect circulatory endurance, but not so well as some other activities. But this form of exercise has little, or any, value for social-efficiency benefits and has limited use for leisure.

Basketball, on the other hand, is a potentially fine activity for the development of many social traits, such as cooperation, loyalty, sportsmanship, determination, and the like. This activity, *when utilized appropriately*, can improve circulatory endurance, but it would have a relatively low value rating for the development of muscular strength, except in the legs. Further, basketball's contribution to leisure-time participation is more limited than those of other activities that could be named.

Swimming is a fine recreation activity, certainly one of the best among those in physical education. This activity is also excellent for the improvement of circulatory endurance, but it must be especially presented for this purpose. Further, it can be a relaxing activity, and it is so recognized in the psychiatric care of the emotionally disturbed. However, swimming is not so effective as many other activities in the development of that host of social traits that center about team play.

PHYSICAL FITNESS IMPROVEMENT

In Chapter 1, physical fitness was defined as the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and to meet unforeseen emergencies. In Chapter 11, on evaluation, *physical fitness and motor fitness* components are identified. In addition to the absence of disease, the soundness of the vital organs, and the proper nutrition of the body, the physical fitness components are muscular strength, muscular endurance, and circulatory endurance; in addition to these, the motor fitness components include muscular power, agility, speed and body balance.

In this section, emphasis will be placed upon the three physical fitness components, as those which are considered basic and minimal. This does not mean that the other components comprising motor fitness should be neglected; certainly, in any comprehensive physical education program, efforts should be made to develop these traits. Further, frequently provisions can be made within the strength-stamina complex for their realization, as will be seen later.

Muscular Strength and Endurance

Muscular strength is defined as the maximum contraction that muscles can apply in a single effort. Two types of *muscular endurance* are recognized; *static* (isometric), whereby a maximum muscular contraction is

held for a given time; and *dynamic* (isotonic), whereby the muscles continue to raise and lower a given submaximal load as long as possible. In this book, the dynamic type of muscular endurance will be emphasized, as exercises of this type are superior to static exercises in the improvement of muscle endurance and in the retention of strength after the cessation of exercise for a time.

In order to develop muscular strength and muscular endurance, those activities which offer strong resistance to the muscles should be utilized. For best strength development, the resistance should be greater and the number of repetitions should be fewer; the reverse is the case for best muscular endurance improvement. Resistance may be applied to the muscles in various ways.

Conditioning (calisthenic-type) exercises and training with weights are two particularly useful types of exercise for the improvement of muscular strength and muscular endurance. The advantages are: the exercises can be systematically planned to cover all muscle groups of the body and to emphasize areas of greatest need, the dosage of exercise for a given time can be controlled; and progression can be regulated from very mild forms to vigorous and exhaustive efforts. Conditioning exercises can be devised which will provide for the development of body control, flexibility, balance, and good posture, as well as for increased muscular strength and endurance.

The entire body can be utilized as the resistance medium. These exercises include use of gymnasium apparatus, playground jungle gyms and climbing devices, trampoline, climbing ropes, overhead ladder, traveling rings, and the like. Agility, coordination, neuromuscular control, flexibility, and poise are other benefits derived from this form of exercise. Muscularly weak boys and girls, however, will not be able to perform even the simplest exercises on apparatus; these pupils must first gain strength sufficient to support their bodies with some facility by other means.

Several other types of strengthening activities can be utilized. These include combatives of an infinite variety and form; some forms of dance, especially modern, gymnastic, and ballet; walking or hiking while carrying loads; and games and relays, when weights are carried or resistance to the individual is involved. Applying the principle of resistance to the muscles, other activities will occur to the classroom teacher seeking variety and interest in order to improve the muscular strength and muscular endurance of her pupils.

Circulatory Endurance

Activities for the development of circulatory endurance require moderate contractions of large-muscle groups for relatively long periods of time during which the respiratory and circulatory systems are stimulated.

The conditioning exercises proposed for strength development as usually applied are not satisfactory for the improvement of circulatory fitness. However, by some changes in their use, they may be so utilized with some effectiveness. To do this, conditioning exercises can be done rapidly and continued vigorously until the pupil is breathing heavily and the heart is beating fast. Further, these exercises can be interspersed with jogging and running, as in some of the group exercise systems to be presented in Chapter 8.

Particularly desirable forms of exercise to develop circulatory endurance are running and swimming, since these exercises can be reasonably well controlled. Thus, distance, speed, and duration can be regulated in accordance with the physical fitness status of the pupil. Progression in the amount and nature of the exercise can be planned from day to day. Many sports also have a potentially high circulatory endurance element; the sports with greatest value for this purpose are those requiring sustained running, such as soccer and basketball.

Regular exercise of the right kind and amount can play a very important role in developing and maintaining a healthy and well-functioning circulatory system. Research has shown that a *sound* heart cannot be damaged from exercise, a finding which effectively explodes one popular myth of long standing. There is far more trouble with fatty hearts and blood vessels that are not worked hard enough or long enough; exercises are needed to *normalize the blood chemistry* in the face of higher and higher fat intake in modern society. Several studies show that young boys and girls can take a great deal more circulatory endurance work than is commonly supposed. This is contrary to the traditional view held by many parents, teachers, and physicians that young children should be kept away from such endurance efforts. In general, throughout the country, elementary school boys and girls have been far too restricted in this area of development.

Principles of Fitness Exercise ¹

Physical activities by themselves have little or no value aside from the way they are utilized. The most potentially useful activity for the improvement of a given physical fitness component can be rendered ineffectual if improperly applied and if conducted in an indifferent and lackadaisical manner. For example, a fifth-grade boy who can lift a 25-pound weight ten times would not improve his strength if he limited his ten lifts to a 10-pound weight. Or a boy capable of running a mile in seven minutes would not improve his circulatory endurance from training sessions limited to a 14-minute mile. Likewise, basketball, swimming, or

¹ Adapted from H. Harrison Clarke and David H. Clarke, *Developmental and Adapted Physical Education* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), p. 159.

any other activity may be conducted in so slipshod a way that physical fitness benefits are very limited or lacking entirely. For maximum benefits, therefore, the classroom teacher should have an understanding of and should apply scientific principles of exercise. Certain of the more useful of these principles are given here.

ADAPT EXERCISE TO THE INDIVIDUAL'S LEVEL OF TOLERANCE. Exercise tolerance is the effort level at which a boy or girl can participate in a physical-fitness activity without undue discomfort or fatigue. Exercise which is easy for the pupil falls short of his tolerance; exercise which either is impossible for him to perform or which leaves him in a distressful state exceeds a reasonable interpretation of exercise tolerance. A first and basic step of the classroom teacher in conducting physical fitness activities is to determine the exercise tolerance of children in her class, both as a group and as individuals within the group.

Some hints of the exercise tolerance of the pupil may be obtained from his score on a physical fitness test; the lower the score, of course, the less his exercise tolerance. Further, the scores on different items composing a fitness test battery will help. For example, if a boy cannot chin once, some form of modified chinning would be necessary for him; and it would be hopeless to expect him to perform on gymnasium apparatus where he must support his body weight by his arm and shoulder muscles.

Reference to test scores alone, however, will not be enough, as many exercise forms are not tested. Here, the teacher will need to observe the pupil under various exercise situations and judge his tolerance for each. Such indicators as the degree of discomfort during exercise and the amount of breathlessness following exercise are helpful in judging the tolerance level. Also, the presence of exhaustion, slow recuperation, and excessively sore muscles indicates that the exercise was too severe.

OVERLOAD TO INDUCE A HIGHER LEVEL OF PERFORMANCE. In overloading, the pupil should exercise with greater intensity or for a longer time *than is usual for him*. Thus, "overload" is a relative term; a slight overload exceeds normal activity to a small degree, while a heavy overload equals the maximal performance of which the individual is capable at the moment. Overloading, of course, should be kept within the pupil's exercise tolerance.

In order to improve either strength or endurance effectively, therefore, *the individual must be pushed beyond his customary performance*. Athletic coaches use this principle routinely. In track, workouts are planned to extend the runner more and more as his exercise tolerance increases; in football and basketball, scrimmages and other procedures are utilized to accomplish the same end.

PROVIDE FOR PROGRESSION. The principle of exercise progression logically follows the two principles already presented. Thus, the physical fitness plan starts with an understanding of the pupil's exercise tolerance;

then, within this tolerance level, an exercise regimen is prepared to provide for overloading the muscles to develop strength or for increasing the demands on the circulatory-respiratory systems to improve cardiovascular endurance. If the exercise scheme stopped at this point, some improvement in fitness components would result, but it would soon cease as the body adjusted to the new requirements made upon it. Progression must now be affected by increasing exercise demands in order to continue advancing the fitness of the pupil.

Progression may be accomplished by increasing either the intensity or the duration of exercise. The common method of intensifying exercise in strength development is to add to the resistance against which muscles work, as by increasing the amount lifted in weight training; this may also be achieved by increasing the rapidity of the lifts while leaving the load unchanged. Progression in duration for this form of development is accomplished by requiring more repetitions of the same load. In circulatory endurance, intensity is increased by stepping up the speed at which a cardiovascular activity, such as running, is performed; duration is enhanced by prolonging the time the activity is continued at the previous pace. In general, it is best not to provide progression by increasing both intensity and duration at the same time; increase duration first, then increase intensity.

ADVANCE PSYCHOLOGICAL LIMITS OF EFFORT. Except for athletes in highly competitive events, very few boys and girls have ever been extended to the full limits of their physiological potentialities. Actually, most live through the years of their youth—and, hence, through life—at a low level of physical effort. As a consequence, psychological tolerance for strenuous exercise is usually reached long before physiological limits are attained. The psychological limit is all too frequently regulated by habit, boredom, slight aches, breathlessness, and by such mental factors as anxiety and fear of physical harm. Under such conditions, the pupil may stop exercising before any real overloading takes place; consequently, no appreciable increases in physical fitness components result.

In applying this principle, the teacher needs to use some judgment, since certain of the factors related to psychological limits also serve as safeguards, preventing overstrain. The motivation of the pupil is essential for best physical fitness results. Once motivated and with proper understanding of his fitness status, he will be able to press toward his physiological limits; the guidance of the teacher is needed in giving him the proper understanding.

WARM UP AND EASE OFF GRADUALLY. The body should be warmed up gradually with light, rhythmic exercises especially before speed or severe circulatory endurance exercises are attempted. Included in this warm-up should be exercises to increase flexibility, or suppleness, especially of the hip-spine area; these are desirable to facilitate muscular action with

minimum resistance of the tissues and joints. Just as exercise sessions should start slowly by warming up, they need to finish by easing off gradually. Slow and deep breathing will also facilitate recovery from vigorous exercise.

THE PHYSICALLY UNDERDEVELOPED

The problem of physically underdeveloped children in the United States is an extensive and severe one. Generally, teachers think of this problem as being confined to those boys and girls who have orthopedic defects or organic deficiencies. Thus limited, the number of underdeveloped children in elementary school classes would be small indeed, if not entirely absent. Certainly it is serious for those thus afflicted, as a post-polio child or one who has had rheumatic fever, as examples, can benefit from participation in physical education activities as selected or within restrictions specified by a physician.

In this book, however, in addition to the handicapped, the physically unfit and those with functional posture defects are considered underdeveloped. When these cases are included, the situation increases considerably in magnitude. This expanded situation is also serious, for, as demonstrated in Chapter 1, adequate strength and stamina are essential for carrying out the days' activities, whatever they may be, with vigor and alertness, without undue fatigue, and with an ample reserve of energy to enjoy leisure and to meet unexpected emergencies. Thus, physical fitness is essential for the effective functioning of the total organism, and so it contributes to the child's well-being, to his mental applications, and to his social adjustment. It follows, therefore, that boys and girls who are deficient in basic physical fitness components are underdeveloped; they are also physically handicapped—many of them seriously so.

Further, as was shown in Chapter 1, ample research evidence exists to demonstrate that the physical fitness of American children compares very unfavorably with the physical fitness of children in several other countries. This situation is believed so serious that the following recommendation was considered basic by the President's Council on Physical Fitness: "Pupils who have a low level of strength, agility, and flexibility should be identified by a screening test as part of the health appraisal. Pupils so identified should be required to participate in a program of developmental exercises and activities to raise their physical performance to desirable levels."²

Generally, elementary school classroom teachers are not professionally prepared to conduct complete physical education programs for under-

² *Youth Physical Fitness—Suggested Elements of a School-Centered Program* (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, July 1961), p. 14.

developed boys and girls, including the three groups mentioned above: the physically unfit, the posture deviate, and the handicapped. In fact, for some aspects, even the special teacher of physical education does not have adequate preparation and so needs specialized graduate study in order to qualify. In this book, only a limited approach to the underdeveloped is presented, it is confined to what might logically be expected of an elementary school classroom teacher. For teachers who desire a more comprehensive presentation, the following text may be consulted: H. Harrison Clarke and David H. Clarke, *Developmental and Adapted Physical Education*, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.

PHYSICALLY UNFIT BOYS AND GIRLS

Evaluation

In approaching a physical activity program for unfit boys and girls, it must be assumed that each has had a health appraisal and has been pronounced organically sound and free of orthopedic handicaps by a physician. The classroom teacher's first step in an effort to improve the status of physically unfit pupils in her class is to identify those who are subpar in basic physical fitness components. In order to do this, pupils must be tested with tests designed to evaluate these components. A presentation of physical and motor fitness tests and their various components appears in Chapter II.

Obviously, pupils who score lowest on these tests are the most unfit in a given class situation. Compared with national standards, however, these individuals may or may not be as low as their position in the class standing indicates, this will depend on the general level of the class as a whole. In some instances, the class may be generally superior to the test norms, in which case the unfitness of the pupils may not be so great as first thought. On the other hand, if the class is generally low, the lowest ones on the test are even more unfit than initially seemed to be the case.

There is no established point on any test which divides boys and girls as fit and unfit. Thus, the teacher must make this decision for herself if she wishes to give special attention to the physically subpar in her physical education program. Certainly, however, the lowest on the test administered are the most unfit (provided the test is valid) and are in greatest need of developmental and conditioning activities.

In order to make proper decisions for the determination of fitness levels, some knowledge of the tests involved is essential. To illustrate: The national norms on the AAHPER Youth Fitness Test are considered much too low for schools with adequate physical education programs; consequently, efforts should be made to have pupils exceed the 50th percentile for these tests. Strength Index norms for Rogers' Physical Fitness Index were constructed in 1938; they still reflect about what would

be expected from a physical education program today that did not place emphasis upon physical fitness development. The average Physical Fitness Index, which is 100, might be accepted as a reasonably good goal, at least initially, toward which subpar pupils may strive. The norms for state motor fitness tests are probably quite realistic for the states involved. For some, however, the practical limitations of time for physical education, the pupil-teacher ratio, and the facilities available might force teachers to accept lower standards—at the start, anyway. On the other hand, some teachers may logically feel, and rightfully so, that the physical fitness level of American children is generally too low, and that the establishment of fitness standards should exceed present averages by substantial amounts.

Exercise Program

The types of physical education activities to be utilized for the development of the physical fitness components of muscular strength, muscular endurance, and circulatory endurance were presented earlier in this chapter. The principles of exercise to be applied in the development of the physical fitness components were also discussed. The utilization of these activities in accordance with the principles of exercise, then, constitutes an essential process for the classroom teacher in meeting the individual physical fitness needs of her pupils.

As would be expected, the exercise tolerances of the unfit pupils are low in contrast with the tolerances of the fit pupils. The establishment of the muscular and circulatory endurance tolerance levels for the unfit is the essential starting point for exercises before the principles of progression and overload can be applied. Some groupings of pupils with similar exercise tolerance will usually be possible, although each pupil should know his own tolerance and should be permitted to exercise within this limitation.

In the following three chapters, different types of activities for the elementary school physical education program are presented. These include conditioning exercises, weight-training, stunts and tumbling, apparatus exercises, track and field, rhythms and dance, and games and sports. Within each of these chapters, indications are given of the potential value of the various activities described. In determining her exercise program for the physically unfit, the classroom teacher should choose those with a high rating on the physical fitness components; a balance should be achieved among the three components of muscular strength, muscular endurance, and circulatory endurance. When feasible, activities to improve such other components as body flexibility, explosive power, agility, speed, and balance should also be included.

To organize an effective developmental and conditioning program, in order to meet the individual physical fitness needs of subpar boys and

girls, functional grouping of pupils is desirable. Such groupings should be based upon the types of exercise required and the exercise tolerances of the individuals, as indicated above. These programs are most effective when unfit pupils are scheduled separately for at least part of their physical education activities, as having them alone permits the classroom teacher to concentrate specifically on their fitness needs to the exclusion of other responsibilities. However, the participation of these pupils in the regular class activities is also desirable, as they, too, need to benefit from the full potentialities of physical education.

The Case-study Approach ³

Scores on physical fitness tests are generalized indices; they are not essentially diagnostic. In this respect, they are comparable to clinical thermometer readings by physicians. Thus, a high thermometer reading, say of 102°, indicates that the individual has *something* wrong, but it does not tell *what* that something is. In like manner, a low score on a fitness test suggests to the teacher that a deficient condition exists—not what is causing the deficiency. As the patient with a fever requires medical diagnosis before treatment, so the child with a subfit score should be studied in order to determine the cause or causes of his condition before an appropriate fitness program can be planned for him. The causes of lack of strength and endurance are many. Certainly, the assumption that exercise is all that is needed is short-sighted and can be completely wrong in some instances. Thus, the identification of causes is a prime concern of the teacher if she is to be effective in improving the physical fitness of all subpar boys and girls. The case-study approach has been found to be useful for this purpose.

Practice in many school situations has shown, however, that a prevalent cause of physical unfitness is a lack of the right kind and amount of exercise. Thus, in the interests of materially reducing the number of case studies to be conducted, the physical fitness program, as considered above, may initially be put into operation for unfit pupils, unless the cause is obvious, as for obese children. Then, after a period of four to six weeks, the physical or motor fitness tests utilized by the teacher should be repeated for these pupils. Many of them will have responded favorably to exercise; for example, their tests scores will have increased appreciably. For these individuals, the exercise program may continue with progressive increase in dosage until minimum standards are reached or, preferably, exceeded.

The teacher's investigation of the causes of lack of fitness may then be limited to the smaller number of boys and girls whose fitness scores decrease or do not increase appreciably on retests. These causes may be

³ Clarke and Clarke, *op. cit.*, chap. 6.

located by use of case-study procedures. A formal device which provides for the systematic accumulation of essential information for this purpose is Clarke's *Case-Study Form and Health-Habit Questionnaire*.⁴ These instruments are used in conjunction with the use of Rogers' Physical Fitness Index as the test for selecting unfit boys and girls; for those who use other tests for this purpose, it is simple enough to substitute tests on the forms, as the case-study process remains the same.

The causes of physical unfitness include the following: (1) lack of the right kind and amount of exercise, as previously mentioned; (2) improper living, including health habits; (3) nutritional deficiencies, especially undernourishment and obesity; (4) chronic fatigue; (5) tenseness and inability to relax; (6) emotional disturbances, (7) personal and social maladjustments; and (8) organic drains. A case-study form and health-habit questionnaire will aid in assembling essential information pertaining to these causes. However, the forms should be used in conjunction with personal interviews. In such a situation, promising leads toward identification of causes may be followed with additional questions, or new lines of questioning may be utilized when causes are unidentifiable. Information revealed by case studies is frequently highly personal; as a consequence, it should be kept confidential between the student and the teacher.

From the various interviews with unfit boys and girls, a variety of action proposals will result. These include the following:

1. *An exercise regimen, well balanced to improve physical fitness components.* While exercise programs will already have been in operation for the unfit pupils, they will be continued for most if not all of them, in addition to other actions taken in individual cases. For some boys and girls, when the causes of unfitness are still not clear after case studies, the exercise program may be the only action taken.

2. *Recommendations for the improvement of living habits.* Such recommendations will logically take a variety of directions, including dietary practices, problems pertaining to fatigue, rest, and relaxation, the overburden of out-of-school activities, personal-social relationships, situations underlying worries and moods, home and school problems, and the like.

3. *Dealing with problems of overweight.* While proper eating habits constitute the essential attack on the overweight problem, exercise is also essential. Jean Mayer,⁵ a world authority on nutrition, has effectively supported the conviction that physical inactivity is an important factor explaining the frequency of increasing overweight in modern Western

⁴ H. Harrison Clarke, *Case-Study Form and Health-Habit Questionnaire* (Cedar Rapids, Iowa: Nissen Medart Corporation, 930 27th Ave., S.W.). Also reproduced in Clarke and Clarke, *op. cit.*, pp. 134-137.

⁵ Jean Mayer, "Exercise and Weight Control," *Exercise and Fitness* (Chicago, Ill.: Athletic Institute, 1960), p. 110.

societies. Kraus and Raab⁶ also maintain that lack of exercise is a common cause of overweight and that prescription of exercise is important in its medical treatment.

4. *Providing relief from fatigue and hypertension.* Certain queries on the health-habit questionnaire should explore fatigue-hypertension relationships, the answers should be checked against the pupil's behavior, as observed in his class and school activities. Hypertensed individuals are prone to be nervous or jittery. The causes of this condition should be sought. In addition, physical activities of a relatively mild, rhythmic type should be used, building up to more vigorous ones later on.

5. *Improving social adjustment and relieving personality conflicts.* For unfit boys and girls who are also socially maladjusted or who have personality conflicts, the usual study of causes should be conducted and the contributing conditions eliminated if satisfactory results are to be obtained. In addition, action proposals may include participation in activities designed to improve their situations. Suggestions of activities for this purpose appear later in this chapter.

6. *Referring unfit pupils to appropriate specialists when indicated.* Such referral will be advisable when the teacher suspects the presence of physical defects, organic lesions, or personality maladjustments as the cause of unfitness. On occasion, the aid of such specialists as the following will be helpful: physician, school nurse, guidance counselor, psychologist, and home economist. Those boys and girls who fail to improve their physical fitness after repeated attempts to provide proper exercise for them and who reveal no basic causative factors should be referred to a physician for examination and recommendation.

Motivation

The full voluntary participation of unfit boys and girls in the physical education program planned for them is vital if individual physical fitness needs are to be met effectively. Their cooperation is needed in carrying out exercise routines correctly and vigorously, in responding to advice on personal living habits, and in the correction of any remedial defects which they may possess. Consequently, the teacher should make every effort to secure an enthusiastic response to the procedures she proposes for each pupil.

An essential step in motivating the physically unfit pupil is to give him an understanding of his status and of the reasons for the procedures to be followed in improving his condition. An explanation of the validity of the physical or motor fitness test utilized in evaluating fitness should be made; the significance of test scores, especially the pupil's own, should be

⁶ Hans Kraus and Wilhelm Raab, *Hypokinetic Disease* (Springfield, Ill.: Charles C. Thomas, 1961), p. 139.

interpreted. Further, a discussion of the value of physical fitness will help greatly in providing a sound motivational base for wholehearted participation in the program proposed. This discussion should indicate the importance of fitness for physical well-being, for ability to learn advanced skills and to participate well in athletics, for organic soundness, for improved peer status, and for increased application of mental powers.

The classroom teacher is in a key position to integrate physical fitness concepts, as well as all aspects of physical education, into the total education program of her class. Younger children may make drawings, prepare posters from cutouts, and make collections of clippings dealing with desirable health habits and fitness practices. Older children may be assigned readings on exercise for fitness, on eating habits in weight control, and in autobiographies with physical fitness emphasis. The calculation of individual fitness test scores, the computation of class averages, and the preparation of simple graphs based on class test results would be possible in the upper elementary grades.

Relatively frequent repetition (every four to six weeks) of the test used in evaluating physical or motor fitness is especially important in the motivation of unfit pupils. Between these testing periods, self-testing procedures can be employed, if desired. Through this process, pupils are able to gauge their progress from time to time. A powerful motivator is the pupil's realization of progress made toward desired goals.

A number of other procedures may be followed in the motivation of unfit boys and girls. These include: (1) the effective utilization of the bulletin board for posting motivational materials, including posters, clippings, slogans and the like; (2) exercising to music or singing while performing prescribed drills; (3) presenting assembly programs and physical fitness demonstrations before local parent-teacher associations and other civic groups. Many other suggestions for motivating pupils toward physical fitness improvement will occur to the classroom teacher. Most teachers are well versed in the use of classroom aids; the adaptation to physical fitness processes will be relatively easy.

POSTURE CONSIDERATIONS¹

Most classroom teachers will not feel fully prepared to deal with the posture problems of their pupils. However, the elementary school years are crucial ones in acquiring a good posture for life. It is during this period of growth that the skeleton matures and that the bones form completely from cartilage.² Therefore, certain basic concepts relative to posture and its improvement are presented here.

¹ Clarke and Clarke, *op. cit.*, chap. 8.

² See Chapter 2 of this book.

Values

The values of good posture may be related to the pupil's appearance, movement efficiency, and physical fitness. Each of these will be considered briefly.

APPEARANCE. The advantages of an attractive appearance are well accepted. Great efforts are made in our society to appear attractive; for this purpose, large sums are spent on clothing, on keeping in style, and on cosmetics and the beauty parlor. The body itself must inevitably contribute to the end result; certainly, no one would judge a person with protruding head, rounded shoulders, and sagging abdomen as having a pleasing appearance.

MOVEMENT EFFICIENCY. In sports, the athlete's stance is vital in the performance of his function; thus, there are the characteristic stances on the baseball batter, the golfer, the fencer, the boxer, the football lineman, and so on. In standing, walking, and running, it is logical to expect that a person will be more effective, graceful, and coordinated if his stance is good, that is, if his posture is good.

IMPROVED FITNESS. Research related to the value of posture to physical fitness is inadequate and inconclusive, for the most part. So, the decision as to whether the results derived from good posture are beneficial to the physical well-being of the pupil must be made on rational grounds. On this basis, it is logical to believe that circulation to the vital organs is affected by a slumped chest, resulting in poor breathing and mechanical blockage, and that pressure upon and displacement of visceral and other internal organs, nerves, and blood vessels from poor posture impairs their functioning, thus reducing the pupil's physical fitness.

Posture Faults

In good posture, the body should show good body alignment, good balance, and ease of stance; a feeling of alertness, of readiness for movement, of coordination throughout the body segments should be noticeable. Balanced standing alignment provides a body appearance which, when viewed from the side, is vertical rather than zigzag, the various body masses joining smoothly in symmetry and harmony. Generally, the standing stance should show a straight or nearly straight *gravitational* line starting in front of the ankle joint and passing through the knee cap, through the middle of the hip joint and the tip of the shoulder, to the lobe of the ear. Slight deviations from this line may be normal for some, depending somewhat on the pupil's physique type.

Deviations from the gravitational line may range in degree from slight to marked. These may be judged by subjective means or measured with objective tests. Formal-type tests will not be described in this book, but

they may be found in other sources.⁹ The more common posture faults are described below.

FORWARD HEAD. The head and neck are held in a forward, downward position; the chin is pulled in toward the neck and the face as a whole is downward. Forward head is frequently associated with a round upper back.

ROUND UPPER BACK. Round upper back, also known as *dorsal* or *thoracic kyphosis*, consists of an increase in the normal spinal curve in the thoracic region (that part of the spine to which the ribs are attached). Forward head, round shoulders, and hollow back are usually also present with this fault.

ROUND SHOULDERS. The shoulders are forward with the tip in front of the gravitational line. The shoulder blades in the back are separated beyond normal and are prominent. With this fault, there is a definite tendency to round the upper back.

HOLLOW BACK. In hollow back, also known as *lumbar lordosis*, the normal curve in the lower back is exaggerated (hollowed). The pelvis tips down in front and the abdominal muscles become stretched; as a consequence, the abdominal area sags in front. Lordosis is usually accompanied by a number of other compensatory deviations, such as round upper back, round shoulders, and forward head.

LATERAL DEVIATION. Lateral postural faults of the spine, or scolioses, are of two general types, C and S curves. The commonest scoliosis is the C curve, which consists of a long convexity to one side, usually the left. The S scoliosis consists of reverse curvatures, laterally in one direction in the upper back and in the opposite direction in the lower back. As a consequence of scoliosis, one shoulder will be lower than the other; the hips will be level, unless the legs are of uneven length, although the iliac crest on one side will be more prominent than that on the other.

Causes of Posture Faults

The causes of posture faults may be classified into four general categories: lack of posture knowledge, poor muscular development, poor posture habits, and physical defects. Each of these will be discussed briefly here.

LACK OF POSTURE KNOWLEDGE. Unless boys and girls have been instructed in proper posture, they do not know what good posture is. The starting point in any posture improvement program, then, is to teach pupils good posture stance. In doing so, they should be given the neuromuscular feeling of the proper position. If this can be done in front of a full-length mirror, they will be able to see what they look like as well.

Regardless of the teacher's instructions, however, best posture will be

⁹ H. Harrison Clarke, *Application of Measurement to Health and Physical Education* (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959), chap. 7.

practiced habitually only if each boy and girl desires to do so. A pupil may develop such a desire when he understands thoroughly the aesthetic and fitness advantages which result from a well-poised and well-coordinated body stance.

POOR MUSCULAR DEVELOPMENT. A common associate of poor posture faults is poor muscular development. Unfit boys and girls are poor-posture prone, since they do not have the strength to maintain good posture for any length of time. Their antigravitational muscles lack muscular endurance. Thus, these individuals need to improve their general musculature.

POOR POSTURE HABITS. Poor posture habits, of course, are closely associated with the presence of posture defects. Such habits may involve faulty standing or sitting positions, in which the boy or girl permits the spine to sag, the abdomen to protrude, and the shoulders to round.

Inasmuch as elementary school pupils sit at desks in the classroom for rather long periods during the day, a properly designed chair and a table surface of correct height are needed. The chair seat should be of such height that the feet can rest on the floor without pressure under the knees which would interfere with circulation, for the same reason, the seats should be shallow enough so that hips can be pushed well back. The seat should also slant slightly toward the rear with a hollow for the buttocks, as an aid in maintaining the hips at the back of the chair. The back of the chair should be curved, or, better still, should be open at the bottom to allow the hips adequate space. Support for the back is needed only below the shoulder blades, at the dorso-lumbar junction. The desk or table surface should be at a height which permits the elbows to rest on it without lifting the shoulders or lowering the chest.

PHYSICAL DEFECTS. Certain types of physical defects are obvious causes of faulty posture; these consist of situations which may or may not be capable of being corrected. For example, if one leg is slightly shorter than the other, the hips will be uneven and a scoliosis will result; in this instance, the correction may be quite simple, consisting of adding a lift to the heel of the shoe. However, if the short leg is pronounced, as caused by a crippling disease such as infantile paralysis, the individual may have to live with a postural deviation.

Posture Exercises

Good posture depends upon: (1) knowing what good posture is; (2) being able to assume good posture; (3) possessing the fitness to maintain good posture easily; (4) having the desire to practice good posture consistently. With these four factors realized, the posture problem will be largely met. In some instances, boys and girls will need so-called corrective exercises to permit them to assume proper posture positions with ease. Exercises for this purpose will be found in Chapter 8.

THE HANDICAPPED

Three of the last four presidents of the United States had handicapping conditions; one of these conditions was the aftermath of infantile paralysis, a second was a damaged heart, and the third was a crippling back condition resulting from a war-connected injury. Each of these presidents recognized that a physical handicap was no reason for not keeping his body generally fit. Thus, President Roosevelt swam, President Eisenhower played golf, and President Kennedy took therapeutic exercise, swam, and otherwise engaged in physical activities.

Thus, the handicapped, whether adults or elementary school children, should exercise to maintain and develop their physical fitness and to otherwise find enjoyment in life. Obviously, the exercise in which physically handicapped children should engage should be approved by their physicians. Such exercise will vary in kind and degree according to the nature and extent of each child's disability. Actually, there are very few children indeed who cannot participate in and benefit from exercise. The classroom teacher who wishes to pursue this topic further should consult special books in this area.¹⁰

SOCIAL EFFICIENCY

A socially efficient individual was defined in Chapter 1 as one who functions harmoniously within himself, in his relationships with others, and as a member of the society of which he is a part. This concept involves a number of personal and social traits; in essence, they are related to the personality and character of boys and girls. The games, sports, and other activities of physical education provide a unique laboratory for the development of that complex of interrelated traits comprising social efficiency. Whether the full potentialities of this laboratory situation are realized, however, depends upon how the activities are presented and conducted.

The classroom teacher can utilize certain general procedures to achieve the greatest possible social efficiency benefits for her pupils. These procedures serve to "set the stage," so to speak, so that such benefits may result. By themselves, they have little or no value; their effectiveness depends upon the indispensable role of the teacher.

Games and Sports

Most personality and character traits are common to all physical education activities; however, their expressions differ and the degree of in-

¹⁰ See Clarke and Clarke, *op. cit.*, chaps. 9-12. Also: Arthur S. Daniels, *Adapted Physical Education* (New York: Harper & Row, Publishers, 1934).

volvement varies from activity to activity. For example, combatives require face-to-face conflict and body contact, which require a high level of physical courage; courage is also necessary for the mile runner as he inflicts a punishing performance on his organism in order to best an opponent. The quarterback in football must display great initiative and courage; however, tactics are also needed in playing a good tennis match against equal opposition. The diver, the gymnast, and the baseball pitcher must demonstrate remarkable poise and confidence for successful performances; yet, how many times have we admired the "clutch" performances of the lone basketball player as he scores a winning foul shot or the golfer who sinks the last long put on the eighteenth green to win. Sportsmanship, loyalty, self-confidence, persistence, and will power are traits requisite in all sports.

A fine differentiation of the potential value of different games, sports, and athletic events in the development of personal-social traits is beyond the scope of this book. However, some rough classifications will be attempted in Chapter 9. For maximum social benefits, however, *team* games and sports should be included in the physical education programs for elementary school boys and girls; no pupil who is physically able to participate should be exempted from these experiences.

Team games and sports offer a unique opportunity, through maximum reliance on team play, for the development of such desirable social traits as cooperation, voluntary subjugation of self for the good of the group, leadership, and followership. The social merits of different team games and sports, as is true for other traits, are relative. Such close-knit team sports as basketball and soccer, where the team play is constant, rapid, and intricate, have maximum social potentialities; sports such as softball and volleyball, by contrast, have lower value for this purpose.

Team games and sports have another value, especially for elementary school boys and girls in the upper grades: they satisfy, in part, the need to belong, to be an accepted and a contributing member of a group. *The boy or girl who feel isolated from his or her peers may develop all sorts of undesirable behavior traits.* Team sports provide opportunities for all pupils to be members of a group, to participate in group activities, to strive with others toward the accomplishment of desirable goals of achievement. For most upper elementary school pupils, the opportunity itself will be sufficient incentive. For isolated, or introverted, pupils, however, the wise guidance of the teacher is essential if they are to experience emotionally the merging of self with the group.

Social Acceptance

As was shown in Chapter 2, boys and girls in the lower grades are individualistic; they have a strong interest in personal performances, with little desire to participate in group efforts, including team games and

sports. As they progress through the elementary school, however, they show more and more interest in being members of a team or group, until at adolescence, boys, particularly, show a marked affinity for team participation, whether it be basketball, track and field, football, or wrestling. At all grades, however, competence in appropriate physical education activities is a vital factor in their peer status, at least until girls reach adolescence.

Peer recognition and social acceptance are important requisites for satisfactory personal and social adjustment. Lack of peer status frequently results in discontent and unhappiness; it may result in the development of undesirable behavior patterns in order to get the attention of others, or it may result in the avoidance of others and the development of an introverted personality. While this is a complex psychological situation which may not be simply resolved, yet the learning of physical skills may be an important element in social adjustment. Competency in physical education skills permits the boy or girl opportunities for desirable recognition by their peers. This recognition may well constitute the difference between the development of social, well-integrated individuals and unsocial, retiring ones. The physical education program, therefore, can contribute, *when properly conceived and presented*, to the development of pupils in their personal-social relations.

Success Experiences

The realization of success in physical education participation is an important experience for boys and girls in developing confidence and poise, which, in turn, lead the way to wider personal-social adjustments. The classroom teacher should so select and present physical education activities that each pupil may have a chance to succeed and does so a fair share of the time. For a pupil to be met constantly with defeat or to be subjected repeatedly to activities beyond his ability to perform can easily result in feelings of impotence and inferiority, culminating in defeatism and withdrawal from his classmates and, possibly, from life situations.

On the other hand, to present pupils with activities they can readily learn, to face them with situations they can master, to provide them with opportunities for improving their own performances through self-testing, or to place them with and against others of their own level of ability will result in their increased interest, self-assurance, and willingness to attempt progressively more difficult assignments. The teacher's application of this success principle may well be the starting point in the unfolding of the full personalities of many hitherto retiring introverts.

the individual differences of boys and girls of the same age are great in terms of maturity, physique type, body size, gross and relative strength, and motor ability. These differences drastically affect their levels of motor performances. The usual heterogeneously formed classes in physical education present a serious problem in class instruction, as classwork usually will be geared to the ability of the less able pupils. If instruction is aimed at the ability of the average pupil, it becomes too difficult for the poor performers and too easy for the good ones. Thus, ability grouping in physical education has definite pedagogical advantages for effective instruction.

Ability grouping for physical education participation also provides a setting for desirable social experiences. When competing individuals or teams are evenly matched, all participants are extended fully for their level of ability, be it good, bad, or indifferent. Opportunities for success experiences result. Players are more active, cooperation is essential, and initiative and courage are necessary requisites for playing the game successfully, in fact, all of the physical, mental, emotional, and social qualities of the contestant are at a premium when playing hard-fought, close matches.

Ability grouping for participation in physical education may be accomplished in two ways: by specific activities or by general motor abilities. In groupings by specific activities, new groups are formed for each activity in the program. An example is "choosing sides" for basketball or any other sport; tests of the different sports, when available, can also be used for this purpose. In groupings by general abilities, a measure of all-round athletic or motor ability is given, and groups are arranged according to the pupils' scores; tests of this sort are described in Chapter 11. In using this method, the classroom teacher should realize that tests of all-round ability do not measure skill in any particular sport, and that thus some inconsistencies from sport to sport may occur. Consequently, in applying them, the best results will be obtained if some judgment is used in placing pupils in the groups, the teacher being guided by her knowledge of the abilities of the different boys and girls, or by her subsequent observation of their performances, to make necessary adjustments in securing proper grouping.

Social Education

The teacher is the key to social education. Social growth through physical education can be no better than the understanding and ability of the teacher to develop in boys and girls today those qualities that are vital for men and women in the "tomorrow" to come when they will be adults. As has been stressed repeatedly in this book, no physical education activity has meaning aside from the way it is conducted. So, here again, mere participation in activities, no matter how potentially useful, will not auto-

matically result in desirable social outcomes. Any sport can be presented in a manner to develop either desirable or undesirable modes of conduct. To illustrate, it is well known that athletic teams reflect their coaches; some teams hold to a high level of ethical conduct and display the best of social traits, while other teams are noted for unsportsmanlike play and a complaining, alibiing attitude.

Further, and for the same reasons given before, no administrative procedure, such as ability grouping, and no general practice, such as providing for success experiences, is effective without the teacher's guidance in its application.

Individual Needs

As was true for physical fitness, discussed earlier in this chapter, boys and girls with atypical personality and social traits should be identified and appropriate steps should be taken to help them toward better adjustments. Too frequently, school pupils are treated en masse in this respect, with occasional reprimands and punishments meted out to the mischievous and incorrigible, no matter how different their temperaments, how varied their interests, how unique their social characteristics, or how pressing their social problems may be.

If all pupils are to develop in socially desirable ways, those with individual needs must be determined; a review of tests that may help in this process appears in Chapter 11. For those with social problems, individual diagnosis to discover the cause of the condition should be instituted; guidance specialists in the school may logically help in this process. Causes should be eliminated in so far as possible, and appropriate physical education experiences should be provided, as discussed above. Retests should be given to check on the progress made. If no progress is recorded after a reasonable period, the parents might well be consulted; and, eventually, if the situation persists, the services of a psychologist may be indicated.

SKILLS

As is obvious to all, participation in physical activities constitutes the process of physical education. In this process, appropriate physical activities are selected and presented in order to achieve each of the objectives sought by the teacher. Boys and girls will participate more effectively and receive greater benefit if they have the skill to do so. The teaching of skills, therefore, is essential for the full realization of physical education objectives.

Physical activities differ not only in their educational content, but also in the contributions they can make to specific objectives. Moreover, the contributions that any one physical activity can make are not confined

the individual differences of boys and girls of the same age are great in terms of maturity, physique type, body size, gross and relative strength, and motor ability. These differences drastically affect their levels of motor performances. The usual heterogeneously formed classes in physical education present a serious problem in class instruction, as classwork usually will be geared to the ability of the less able pupils. If instruction is aimed at the ability of the average pupil, it becomes too difficult for the poor performers and too easy for the good ones. Thus, ability grouping in physical education has definite pedagogical advantages for effective instruction.

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Then, the steps to be taken in realizing the social efficiency and the recreational competency objectives of physical education were presented.

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to a single objective, but may apply in some degrees to others. In selecting activities for her program, therefore, the classroom teacher should understand the educational values of these activities and should keep in mind the purposes to be served by their use.

In this chapter, considerable emphasis has been placed on physical education designed to realize the physical fitness and social efficiency objectives. In so doing, the activities proposed to develop the muscular strength and endurance components of physical fitness were conditioning drills, weight training, gymnastic stunts, and combatives; for circulatory endurance, the activities were running, swimming, and games and sports requiring sustained running or swimming. The activities recommended to develop social efficiency were games and sports, with special emphasis upon those requiring closely coordinated team play.

As can be seen from the foregoing, much of the skill instruction in physical education is education through skills, in which participation in physical activities has for its purpose the realization of such objectives as physical fitness and social efficiency. In preparing for the wise use of leisure time, however, the teacher teaches skills as ends in themselves—to be used as a part of the pupil's recreation. The outcome desired is recreational competency, or the acquisition of skills and their use as after-school, after-graduation activities.

Recreation in its totality is a broad concept including many types of activities. Several school programs and subjects contribute to preparing boys and girls for using their free time in desirable and constructive ways. The classroom teacher should examine the repertoire of physical education activities and see to it that some of those of value for recreational use are included in her program.

SUMMARY

An overview of the total physical education program for elementary school boys and girls was presented in this chapter. Emphasis was placed initially on the fact that each objective requires a separate, unique approach for its effective realization. Thus, the activities and methods most appropriate for the development of strength and endurance are not the same as those for the improvement of personal-social relations; and these are generally not so effective for meeting the recreational needs of boys and girls. Further, it was stressed that no physical education activity has meaning aside from the way in which it is presented.

Considerable attention was given to the manner of approach to the physical fitness of elementary school pupils. In addition to the types of exercise and principles for their application for this purpose, the need to give special attention to the underdeveloped was discussed, in accordance with recommendations by the President's Council on Physical Fitness.

than are those who score low on these tests. Conversely, some upper-grade pupils may not be ready for physical education at their normal level, and so should continue for a time with lower-level activities. Realistic adjustments for such situations should be made by classroom teachers.

CONDITIONING EXERCISES

Advantages

Conditioning exercises have a number of advantages, as discussed in the preceding chapter, such as the ability to plan a body development program systematically involving all muscle groups and the precise adaptation of exercise to the pupil's exercise tolerance. Further, exercises of this sort can be given to many children in a short time. When properly conducted, all children can receive as vigorous an exercise session as the teacher desires. A minimum of space is needed; many of these exercises can be given in the classroom.

Conditioning exercises may serve to supplement other phases of the physical-activity program in order to assure balance and continuity in the enhancement of physical fitness. Such supplementation is particularly necessary when the major portion of the classwork is devoted to mild physical activity; on these occasions, the conditioning exercises may well come toward the end of the period, so as to avoid any resultant fatigue interfering with the effective learning of skills. Such exercises may also be utilized for warm-up purposes prior to undertaking other class activities. In addition, disciplinary values may be realized, depending upon the degree to which the classroom teacher insists upon precision in the execution of the exercises.

Formations

Ten exercises, with some modifications at times, are presented at each of the three levels, low, middle, and high. For the teacher's convenience in developing exercise patterns, the same type of exercise is given the same number at each of the levels. For example, exercise 1 is a push-up movement, increasing in intensity from level to level. Undoubtedly, the classroom teacher will devise or find additional exercises to vary the routine and to maintain class interest in the conditioning work.

An easy way to arrange the group for most exercises described is to have the pupils form in a circle around and facing the teacher, or an exercise leader, with the pupils approximately three feet apart.

Another method of arranging the class for conditioning exercises is to form a single line, facing outward; have the children count off in 4's from the right end. Give the command: "No. 2's two steps, 3's four steps, and 4's six steps, *Forward* (pause) *March*." Then, count: "One, Two, Three, Four, Five, Six." There should now be ample room for most exercises. Further,

Chapter

8

Exercises, Stunts, Apparatus

IN THIS CHAPTER, the following six types of physical education activities will be presented: conditioning exercises, circulatory endurance conditioning, group conditioning activities, posture improvement, stunts and tumbling, and apparatus activities. These activities have primary value for development of the basic physical fitness components of muscular strength, muscular endurance, and circulatory endurance. Certain of them have other physical values, especially as related to neuromuscular coordination, body poise and grace, and efficiency of movement.

In Chapter 2, the vast range of individual differences related to many characteristics of children which have significance for physical education was presented. Subsequently, in Chapter 7, stress was placed on planning physical education based on the capabilities of boys and girls, using their grade in school as a base level only. Application of the principles of exercise is essential for this process; thus, the exercise tolerance of children is the starting point of any rational approach to the improvement of those components comprising physical fitness. This concept is fundamental for the classroom teacher in effectively applying the materials in this chapter to her physical education program.

Instead of classifying activities in this chapter by grade in school, three levels of progression are presented covering the elementary school years. These levels and the grades normally associated with them are: *low level*, grades one and two; *middle level*, grades three and four; and *high level*, grades five and six. Even here, however, the levels should not be considered as mutually exclusive. As conditioning takes place, if pupils at a lower level can gradually work into activities at a higher level, they should do so. Usually, boys and girls who score high on physical and motor fitness tests will be ready for higher level activities much sooner

5. Trunk Bend with Arm Swings

STARTING POSITION. Stand erect, arms overhead, feet well apart.

ACTION. Swing arms downward and as far between legs as possible, bending trunk and neck forward and bending knees; return to starting position. Perform movement rhythmically (2 counts).

6. Toe Touch and Stretch

STARTING POSITION. Stand erect, hands on thighs, feet together.

ACTION. Bend trunk forward and downward, head tucked under, keeping knees straight, and touch fingers to ankles, toes, or floor, depending upon flexibility; return to starting position. Perform movement by stretching and relaxing at intervals rather than in rhythm.

7. Alternate Toe Touch

STARTING POSITION. Stand erect, feet spread shoulder-width apart, arms extended sideward to shoulder level, palms up.

ACTION. Twist and bend trunk, bringing right hand to left toe, keeping knees straight (if possible); return to starting position; repeat to opposite side (left hand to right toe); return to starting position. Perform movement rhythmically (4 counts).

Low-level Exercises

1. Knee Push-ups

VALUE. Strength and endurance of arm and shoulder extensor muscles.

STARTING POSITION. Lie face-down with knees bent; place hands on floor just outside shoulders.

ACTION. Straighten elbows and push shoulders up, keeping body straight, to position resting on hands and knees; slowly bend elbows until chest touches floor, still keeping body completely straight (2 counts). Perform movement as many times as possible. *Variation:* For those who cannot do this exercise, the *standing push-up* may be used: Stand with feet away from wall or from partner's hands (distance may be adjusted to pupil's ability); keeping the body straight from heels to head, perform standing push-ups.

2. Straddle Chins

VALUE. Strength and endurance of arm and shoulder flexor muscles.

STARTING POSITION. Lie on back; clasp hands of partner, who stands astride body.

ACTION. Pull body up until movement is stopped from pressure of partner's legs, keeping body straight; lower body to floor, but continue

when partners are needed for some exercises, 1's and 2's and 3's and 4's can conveniently help each other.

A good demonstrator is needed for the exercises. The teacher can do this or she can have a pupil do it for her. The pupils who are capable would enjoy taking turns demonstrating.

Warm-up Exercises

Before beginning strenuous exercises, light, rhythmical and stretching movements should be used to warm up and prepare the body for vigorous activity. Three or four minutes of this type of activity should suffice. Several exercises of this sort follow, which may be selected by the classroom teacher for the various grades.

1. Arm Swinging

STARTING POSITION. Stand erect, feet slightly apart, cross arms in front, elbows straight.

ACTION. Rhythmically swing arms sideward to shoulder height and return; progress to swinging arms overhead. Inhale deeply when swinging arms up; exhale when swinging arms down. *Variation:* Starting with arms at side, swing arms forward and back in unison.

2. Running in Place

STARTING POSITION. Stand erect, feet together, elbows bent and arms held in running position.

ACTION. Run in place on toes, with arms alternating with legs, as in running. *Variations.* This exercise may be performed mildly, simulating a jog, with feet just clearing the floor; the tempo can be built up to a vigorous movement, with knees raised high and arms "pumping" hard, as in sprinting.

3. Bouncing

STARTING POSITION. Stand erect, feet together, hands on hips.

ACTION. Bounce, by making upward jumps from both feet. *Variations:* Bouncing may be performed mildly by making low jumps; heights of bounces can be increased until maximum distances are reached. Also, perform bounces from one foot; then change to other foot.

4. Jumping Jack

STARTING POSITION. Stand erect, arms at side, feet together.

ACTION. Jump to straddle position, flinging arms sideward overhead; jumping to starting position. Perform movement rhythmically (2 counts).

7. Trunk Twister

VALUE. Strength of lateral abdominal muscles; trunk flexibility.

STARTING POSITION. Lie on back, arms stretched sideward, palms down, knees straight.

ACTION. Raise feet slightly above floor and swing them as far as possible to left without touching floor, keeping legs together and knees straight; swing legs, again slowly, back through same arc and as far to right as possible.

8. Back Leg and Arm Raises

VALUE. Strength and endurance of back muscles.

STARTING POSITION. Lie face down.

ACTION. (a) With hands behind neck, raise and lower legs alternately, keeping knees straight (2 counts); progress by raising both legs together. (b) with arms extended over head, raise and lower arms alternately; progress by raising both arms together; (c) raise both arms and legs simultaneously.

9. Squats

VALUE. Strength and endurance of thigh muscles.

STARTING POSITION. Erect standing position, hands on hips.

ACTION. Keeping feet flat on floor, head up, perform half-squats by bending knees; return to standing position (2 counts). *Variation:* Perform exercise with hands clasped behind head.

10. Jump and Reach

VALUE. General activity.

STARTING POSITION. Stand erect, feet slightly apart, arms overhead.

ACTION. Keeping elbows straight, swing arms downward and backward while bending at hips and knees; swing arms upward forcefully, straightening body, and leaping as high as possible, landing in starting position (2 counts). Repeat intermittently.

Middle-level Exercises

1. Floor Push-ups

VALUE. Strength and endurance of arm and shoulder extensor muscles.

STARTING POSITION. Lie face-down with body straight, place hands on floor just outside shoulders.

ACTION. With weight on hands and balls of feet, keeping body straight, straighten elbows pushing body up; slowly bend elbows until chest touches floor, still keeping body completely straight (2 counts). Perform

without resting (2 counts). Be sure partner keeps his or her body erect and elbows straight. Perform movement as many times as possible. *Variation:* For those who cannot do complete partner pull-ups, they should do partial chins, or do sitting pull-ups until able to perform the complete exercise.

3. Leg Hug

VALUE. Strength and endurance of arm and shoulder flexor muscles, back flexibility.

STARTING POSITION. Stand erect, feet comfortably apart, hands on hips.

ACTION. Take long step diagonally, encircle thigh with both arms and hug tightly, return to starting position; repeat to opposite side (4 counts). Exhale deeply when hugging thigh; inhale when standing erect.

4. Leg Raises

VALUE. Strength and endurance of abdominal and thigh muscles.

STARTING POSITION. Lie on back, hands at side, head resting on floor, knees straight.

ACTION. Bend right knee, lift foot off floor and bring thigh to vertical position, return to starting position, repeat to opposite side (4 counts). Perform movement as many times as possible. *Variations:* (a) Perform movement with both legs together. (b) Perform leg raise series with knees straight.

5. Treadmill

VALUE. General activity.

STARTING POSITION. Front leaning rest (that is, with weight on hands and feet), but with one foot drawn up close to hands.

ACTION. Rapidly change position of feet by jumping motion. Keep arms straight. Continue rhythmically (2 counts).

6. Partial Curl-ups

VALUE. Strength and endurance of abdominal muscles.

STARTING POSITION. Lie on back, hands at side, knees bent at right angle.

ACTION. Lift head and shoulders off floor; return to position (2 counts). Exhale when raising shoulders, inhale when returning to floor. Partner holds down feet. Perform movement as many times as possible. *Variation:* (a) Perform exercise with hands behind head. (b) Do same exercise, but with knees straight. (With knees straight, the psoas major muscle running from inside thigh to lumbar spine is active, with knees bent sufficiently, it is not.)

hands clasped behind neck. (b) Do same exercise, but with knees straight; hook toes and reach toward feet to increase trunk flexibility.¹

7. Perpendicular Trunk Twister

VALUE. Strength of lateral abdominal muscles; trunk flexibility.

STARTING POSITION. Lie on back, arms stretched sideward, palms down, knees straight.

ACTION. Same as trunk twister, except swing feet through an arc perpendicular to the floor. To increase trunk flexibility, hook toes and bring legs as far toward chest as possible without bending knees or raising hips off floor.

8. Back Arm-leg Pulls

VALUE. Strength and endurance of back muscles.

STARTING POSITION. Lie face down, lock hands behind back.

ACTION. Raise chest with head back and force hands away from body forcefully. *Variation:* (a) Perform same movement, but include raising legs with knees straight. (b) Grasp feet with hands; pull arms and legs, forcing body into "bowstring" position.

9. Knee Bends

VALUE. Strength and endurance of thigh muscles; balance.

STARTING POSITION. Erect standing position, hands on hips.

ACTION. Rise slightly on toes; slowly bend knees, keeping back straight and head up; straighten knees; heels to floor (4 counts). Perform partial movements if full movements are not possible. *Variation:* Perform exercise with hands clasped behind neck.

10. Kangaroo Hop

VALUE. General activity.

STARTING POSITION. Standing with knees moderately bent, weight on balls of feet, trunk erect, hands on hips.

ACTION. Jump as high and as far forward as possible, landing in starting position; about-face and return.

High-level Exercises

1. Bar Push-ups

VALUE. Strength and endurance of arm and shoulder extensor muscles.

STARTING POSITION. Standing erect, grasp parallel bars at shoulder height.

ACTION. Jump to free-arm support (that is, resting on hands, body

¹ See note in parenthesis, exercise 6, low-level series.

push-ups as many times as possible. *Variation.* An intermediate exercise between knee and floor push-ups is the bench push-up; this push-up is performed from a position where the hands are resting on chair, bench, or bleachers (arms and body forming right angle).

2. Bar Hang

VALUE. Strength of arm and shoulder flexor muscles.

STARTING POSITION. Stand on support (or be lifted), grasp chinning bar with chin at level of bar.

ACTION. After support is removed, hold chin at bar level as long as possible.

3. Sawing Wood

VALUE. Strength and endurance of arm, shoulder, and back muscles.

STARTING POSITION. Pupils pair off, face each other, and grasp hands with fingers interlaced; feet in stride position (that is, forward and backward).

ACTION. With vigorous action, pupils pump arms alternately as if they were sawing wood, each offers resistance to the other.

4. Sitting Leg Raises

VALUE. Strength and endurance of abdominal muscles.

STARTING POSITION. Sitting position, legs extended, body erect, hands on hips.

ACTION. With quick, vigorous movement, raise and flex knees, dragging feet toward buttocks; extend legs to starting position (2 counts).

5. Squat Thrusts

VALUE. General activity.

STARTING POSITION. Erect standing position.

ACTION. Bend knees and place hands on floor in front of feet; thrust legs back far enough so body is straight; return to squat position; return to erect position (4 counts).

6. Curl-ups

VALUE. Strength and endurance of abdominal muscles; trunk flexibility.

STARTING POSITION. Lie on back, hands at side, knees bent at right angle.

ACTION. Curl up slowly to sitting position, first by raising head, then shoulders, and finally each vertebra in turn until erect position of trunk is reached; return to starting position in reverse order, a curl-down (2 counts). Partner holds down feet. *Variations:* (a) Perform exercise with

7. Corkscrew

VALUE. Strength of lateral abdominal muscles; trunk flexibility.

STARTING POSITION. Lie on back, knees straight, arms at side.

ACTION. Gradually raise legs with knees straight until weight is on shoulders and feet extended as far beyond head as possible; slowly swing legs in corkscrew fashion as far over right arm and to right of body as possible; continue as a controlled swing through an arc one foot from floor until legs are as far to left of body as possible, maintaining the swing over left arm until weight is again on shoulders with feet extended over head as before; repeat to opposite side; return to starting position.

8. Back Trunk Raises

VALUE. Strength and endurance of back muscles.

STARTING POSITION. Kneeling position with buttocks resting on heels and forehead resting on floor; arms straight and clasped behind back.

ACTION. Pull down on arms and draw shoulder blades together, raising hips, trunk, and head until back is about parallel to floor; return to starting position (2 counts).

9. Leg Push-ups

VALUE. Strength and endurance of leg muscles.

STARTING POSITION. Lie on back, arms under hips, and feet stretched up; partner places hands and shoulders on upraised feet, so that legs and body form a 45-degree angle.

ACTION. Slowly lower legs to half-knee bends (or further); push slowly back to starting position (2 counts).

10. Scoring Runs

VALUE. General activity.

STARTING POSITION. Two lines 15 to 20 feet apart are needed; start with right hand on one line.

ACTION. Run to touch opposite line and return continuously; score each time a line is touched by hand. Continue for a specified number of runs or for a given length of time.

Easing-off Exercises

Easing-off exercises should follow vigorous exercise sessions. These should be mild and rhythmical with plenty of deep breathing. The exercises listed for warm-up may also be used to ease off. Further, just standing, breathing deeply, throwing arms outward on inhalation and returning them to the side on exhalation, is a good way to end the session.

hanging free), lower full body weight until arms are less than right angle; raise body without kicking. Perform bar push-ups as many times as possible. *Variation:* Where bars are not available or where pupils cannot perform this exercise, continue with push-ups described for the lower and middle levels.

2. Chin the Bar

VALUE. Strength and endurance of arm and shoulder flexor muscles.

STARTING POSITION. Grasp chinning bar, with feet hanging free (or bend knees).

ACTION. Pull body up until chin is even with hands, without kicking. Perform chins as many times as possible. *Variation:* Where pupils cannot chin, continue with pull-ups or bar hang as described for low and middle levels.

3. Pulling Exercise

VALUE. Strength of arm, shoulder, and back muscles.

STARTING POSITION. Two pupils sit facing each other, legs apart and knees straight so that the soles of their feet are in contact; grasp hands with fingers interlocked.

ACTION. Pupils try to pull each other forward.

4. Rowing Exercise

VALUE. Strength and endurance of abdominal muscles.

STARTING POSITION. Lie on back, knees straight, arms straight overhead.

ACTION. Sit up, reach forward with extended arms, while at the same time raise knees, sliding toes along floor, and tuck close to chest; return to starting position. Perform exercise rhythmically (2 counts).

5. Scissors or Bicycle

VALUE. General activity.

STARTING POSITION. Lie on back, raise legs and hips over body; support hips by propping with hands.

ACTION. Perform scissors or bicycling movement, reaching out each time to stretch leg muscles.

6. V-sits

VALUE. Strength and endurance of abdominal muscles.

STARTING POSITION. Lie on back, knees straight, arms in front of body.

ACTION. Sit up and raise straight legs simultaneously, keeping weight on buttocks and reaching toward toes with hands.

floor; (4) bring right foot down. The lead foot in stepping may be changed at will. This exercise can be easily adapted to the child's exercise tolerance, as the following aspects involved in the performance can be adjusted to his status: height of bench, speed of stepping, and length of time that stepping continues.

Many games and sports have a high circulatory endurance element, especially those that require sustained running. Any game where pupils stand around a good deal of the time will contribute little if any to circulatory endurance; in fact, such games have minimal benefits of any sort.

GROUP CONDITIONING ACTIVITIES

Special exercise systems have been used for group conditioning; they are designed to develop various physical components, although usually combining all of them in the total system. Typically, these systems permit relatively large numbers of pupils to participate during the same time period. The exercises, once taught, are self-administered, the dosage is adapted to the level of each pupil's exercise tolerance, and provisions are made for overload and progression. Although most of these systems have been used with older boys and girls, some adaptations have been made for the elementary school level. Several of these will be described below. The illustrations used will be suggestive for any teacher, providing her with a base on which to establish her own system.

Circuit Training

In circuit training, as proposed by Morgan and Adamson² in England, a circuit is established, consisting of a number of exercise stations usually from six to ten. As a rule, the length of time to perform the exercise at the different stations should be approximately the same, so as to avoid crowding in the circuit. The specific exercises to be performed in a circuit depend on the conditioning effects sought. While the exercises remain the same for all participants, although individual adaptations are possible, the dosage and progression in the circuit are arranged in accordance with each pupil's exercise tolerance. In performing the circuit, each pupil competes largely against himself. The space requirements for circuit training can be adapted to almost any conditions, depending on the choice of activities included.

Illustrative circuit exercises. The following circuit is proposed for boys and girls in the middle level (grades three and four). It is designed for limited space; seven stations are utilized. The purpose of the circuit is to develop muscular strength and muscular endurance; circulatory endurance benefits will also result, usually.

1. *General activity.* Scoring runs: Two lines 15 to 20 feet apart; start

² R. E. Morgan and G. T. Adamson, *Circuit Training* (London: G. Bell & Sons, Ltd., 1938, distributed in the United States by Sportshelf, New Rochelle, N.Y.)

CIRCULATORY ENDURANCE CONDITIONING

In Chapter 7, the nature of circulatory endurance and the physical activities potentially useful for its development were discussed. In this chapter, the use of activities for this purpose is considered. It should be re-emphasized that the essential feature in improving circulatory endurance is obtaining a strong stimulation of the respiratory and circulatory systems.

For the improvement of circulatory endurance, running is a simple exercise, as well as one of the most beneficial. Unless contraindicated for medical reasons in rare cases, every child should engage in some form of circulatory activity each day, all physical education periods should include sustained running (or swimming) in some form. Runs, of course, should be adapted to the exercise tolerance of the pupils. Generally speaking, the run at first should be relatively short and the pace reasonably slow. Initially, too, runs can be alternated with walking. However, keep moving; do not stop and rest; and breathe deeply. The lengths of the runs should be increased gradually, their tempo should be stepped up, and the walking eliminated.

Ingenuity can be applied to setting up running situations, involving more variety and interest than just runs around the track. Following are a number of such situations which the classroom teacher may wish to apply.

1. Running freely around the track, field, or playground, as is commonly practiced.

2. Run, using different types of strides, such as: long strides, short, quick steps, raise knees high, one leg leading the other, bounding, galloping, skipping, and the like. Young children can run by imitating different animals.

3. Use different running patterns, such as zigzags, around obstacles, in circles or spirals, also, running forward, backward, or sideward.

4. Perhaps the school grounds and nearby areas can be utilized to establish a miniature cross-country course.

5. Steeplechase running is similar to cross-country running with the addition of various obstacles involving jumping, climbing, crawling, and so forth. When formalized in a school situation, these may make it an "obstacle course."

Another form of circulatory endurance activity is stepping. Stepping may be done by walking or running up and down stairs or up and down bleachers in the gymnasium or on the athletic field. This activity may also be limited to a small space by stepping up and down on a bench or chair. When done this way, each step is a four-count exercise, as follows:

- (1) Put left foot on bench;
- (2) bring right foot up;
- (3) put left foot on

SUGGESTED CIRCUIT TRAINING RECORD CARD FOR ELEMENTARY SCHOOL CHILDREN												
Name _____	Age _____				Weight _____				Class _____			
	Date _____		Date _____		Date _____		Date _____		Date _____		Date _____	
	Max. Score	Tag. Amt.	Max. Score	Tag. Amt.	Max. Score	Tag. Amt.	Max. Score	Tag. Amt.	Max. Score	Tag. Amt.	Max. Score	Tag. Amt.
1. Scoring Runs												
2. Floor Push-ups												
3. Sit-ups												
4. Squat Thrusts												
5. Pull-ups												
6. Squats												
7. Arms-Legs Raises												
Trial Time	Min. Sec.		Min. Sec.		Min. Sec.		Min. Sec.		Min. Sec.		Min. Sec.	
Target Time	Min. Sec.		Min. Sec.		Min. Sec.		Min. Sec.		Min. Sec.		Min. Sec.	

FIG. 8.1

3. To establish each pupil's circuit, take one-half of his test performance. For example, if 24 scoring runs are completed in one minute, 12 runs would be included in his circuit; or, if 11 floor push-ups are completed, 6 of these would be on that pupil's circuit.

4. Practice the circuit consecutively until the sequence is clearly in mind. Then, on one day, perform the circuit once for time; on the next day, go through the circuit twice consecutively for time. Finally, time each pupil on the complete circuit; which is a repetition of the circuit three times.

5. From this final timing, the pupil's target time is set. Usually, target time is two-thirds of the time necessary for the complete circuit. The pupil can now train against his own individually derived circuit. When his target time is reached, a new circuit can be set up as before.

Continuous Rhythmic Exercises

A system of continuous rhythmic exercises as a means of over-all physical fitness improvement has been popularized by Cureton¹ in numerous youth and adult fitness classes and clinics in this country and throughout the world. As utilized by Cureton, this process is a nonstop exercise session lasting for an hour or more. Muscular endurance exercises are interspersed with walking, jogging, running, hopping, kicking, swinging the arms, deep breathing, and the like, as a type of repetitive workout. Each

¹ Thomas K. Cureton, "Scientific Principles of Human Endurance with Suggestions for Its Development," *Journal of Physical Education*, 52, No. 4 (March-April 1961), 81. (This journal is published by the Y.M.C.A.)

of these sessions starts mildly, builds up to an intensity in the middle and tapers off at the end. Cureton stresses that long-continued exercise is needed in order to warm the body and its organs thoroughly, such warming being essential for effective muscular and circulatory endurance.

Three categories of exercise intensity are provided in Cureton's system, designated as Low Gear, Middle Gear, and High Gear. Thus, progression is possible through the three categories. Also, individual adaptations can be made within each of the three gears. The exercise session is conducted with the class following the leader around the exercise area; pauses are made briefly to perform short bouts of muscular endurance exercises.

Dr. Robert N. Irving, Consultant in Physical Education, Sacramento (California) County Schools, has developed a five-minute sequence of nonstop rhythmic exercises for grades four, five, and six. With some adaptations, a similar series can readily be planned for the primary grades. In performing Irving's sequence, the class is formed into a large circle and moves around it as required for the exercises. The exercises are as follows (remember, the children move from one exercise to the next without stopping):

1. *Run in place*: Varied tempos.
2. *Hopping in place*, by use of various hopping movements:
 - a. Toe hops: hands on hips, feet together; hop up and down on toes.
 - b. Straddle hops: hands on hips, hop feet apart and hop feet together alternately.
 - c. Half-stride hops: hands on hips; hop right foot forward and left foot backward, change feet alternately. Then, perform forward and backward half-hops with both feet together.
 - d. One-foot hops: hands on hips; hopping on one foot only; change feet.
3. *Squat leaps*: Bending at waist and knees, place hands on knees; squat halfway to floor and spring forward. Start with 10 squat leaps and progress slowly.
4. *Squat jumps*: Bend the knees, one foot about 12 inches in front of the other, hands at sides and touching floor; jump straight up, reverse position of feet, and land in squat position again. Start with 10 squat jumps and progress slowly.
5. *Jack springs*: Jump forcefully upward, bringing legs upward to a position parallel with floor; while in air, touch toes with hands and recover to standing position. Judge class's ability and progress slowly.
6. *Jog*: Jog around circle once or twice.
7. *Push-ups*: Do floor push-ups with wide stance, that is, with hands separated up to a foot beyond the point of each shoulder.
8. *All-fours run*: Run around circle on hands and feet.
9. *Schottische kick*: Moving forward, perform four-count movement:

classroom consists of a properly designed chair and a table surface of correct height. The chair seat should be of such height that the feet can rest on the floor without pressure under the knees, which would interfere with circulation; for the same reason, the seat should be shallow enough so that the hips can be pushed well back. The seat should also slant slightly toward the rear with a hollow for the buttocks, as an aid in maintaining the hips at the back of the chair. The back of the chair should be curved backward, or, better still, should be open at the bottom to allow the hips adequate space; support for the back is needed only below the shoulder blades. The desk or table top should be at a height which permits the elbows to rest on it without lifting the shoulders or lowering the chest.

WALKING POSTURE. In walking, the legs should swing forward from the hips freely and easily, with the heel striking the ground first. With the toes pointed straight ahead, the body weight should pass over the outer border and thence to the ball of the foot. The arms should swing freely without rigidity in the shoulders. Stress should be placed upon a fully extended spine, an uplifted abdomen, an erect head, and an expanded chest.

Posture Exercise

With knowledge of correct posture, with adequate general strength and endurance to maintain good posture, and with the desire to practice proper posture, most elementary school boys and girls, especially during these formative ages, will show marked posture improvement. However, there may be some who do not improve appreciably. Unless there are structural faults involved, in which case they should be referred to medical authorities for diagnosis and treatment, these children may be given posture-correction exercises. A limited number of these exercises will be described below.

UPPER BACK, NECK, AND SHOULDERS. A common posture fault is round upper back, which is usually accompanied by round shoulders and forward head. While many exercises can be given for this condition, only two will be given here.

1. *Chest stretch.* Back lying position, sandbag or folded turkish towel under shoulder blades, knees flexed and abdominal muscles contracted to hold lower trunk flat. Movement: Extend arms sideward to stretch chest muscles.

2. *Upper-back exercise.* Lying face down, hands clasped behind neck. Movement: Raise head and elbows, forcing elbows upward; hold position briefly.

LOWER BACK AND ABDOMEN. Hollow back, associated with a protruding abdomen and downward tilt of the pelvis, is a common posture fault. Many of the abdominal exercises previously described in this

5. Repeat this work-rest interval three times—four times in all.

6. The teacher then blows the whistle twice, which is the signal for the groups to rotate (by running) to the next station in order. Allow an extra 15 seconds for rotation and rest.

7. Continue until each pupil has completed four work-rest intervals at each station.

8. Finish by running two or more times around the exercise area.

The five exercises used at the various stations in Murtha's sequence are: bench push-ups, sitting tucks, run-in-place, squat thrusts, and side leg raises. These exercises have been described elsewhere in this chapter. As indicated above, changes in these exercises may be necessary, depending upon the exercise levels of the pupils.

POSTURE IMPROVEMENT¹

In Chapter 7, the values of good posture, the nature of posture faults, and the causes of poor posture were discussed. Essential procedures utilized in the improvement of posture are presented in this section.

Proper Posture Positions

The first and an essential step in posture improvement is to know what good posture is. Thus, the classroom teacher must understand this and transmit it to her pupils. Individual instruction in correct posture is most desirable for best results, as it personalizes posture. Personal instruction is infinitely better than such general admonitions to the whole class as "heads up," "chest out," and "pull in your stomach"; thus, frequently, these instructions result in the co-rection of one fault at the expense of fostering another. Instruction before a full-length mirror, when feasible, is especially effective, as the child can then see as well as feel the correct position.

STANDING POSTURE. Starting from the ground up, the feet should be parallel and two to four inches apart, or with one foot slightly in advance of the other; in either instance, the toes should point straight ahead and the body weight should be carried toward the outer edges of the feet. The body should be slightly forward toward the balls of the feet. The knee caps should point straight ahead. The pelvis should be tilted upward in front, permitting the lower back to flatten and the abdomen to be pulled in. The curve of the upper back should be shallow, extending through the neck and the head balancing thereon. The head should be held erect with the chin tucked in (push top of head up). The tip of the shoulders should be on a straight gravitational line, extending from the ear downward to a point just forward of the ankle joint.

SITTING POSTURE. An essential feature of good sitting posture in the

¹ Clarke and Clarke, *op. cit.*, chap. 8.

These activities are highly individualistic in nature, as each child must learn them for himself. Thus, stunts and tumbling do not rate well for their social development potentialities. However, when successfully accomplished, they do contribute to the child's confidence in himself and do enhance his personal status within his peer group. As was shown in Chapter 2, children of the lower grades are quite definitely individualists, so these activities are especially satisfying to them, as they provide opportunities for them to test their own abilities in a realistic manner. Because of this appeal, they are continued frequently during play periods at home and elsewhere.

The stunts and tumbling activities included in this section are presented under the same three categories as was done for the conditioning exercises. The teacher will recognize, of course, that the degree of difficulty of these activities varies within a given level, and that she must choose those that are within the abilities of the children in her class. Further, the three levels are not necessarily mutually exclusive, as some pupils in grades one and two, for example, may be able to do stunts and tumbling activities included for the middle level; and some boys and girls in grades three and four may still find it best to continue with low-level activities.

The stunts and tumbling activities which follow were deliberately chosen for their vigorous nature, although a limited number of exceptions were made. Although their degree of difficulty within each level is not given, they are arranged roughly in order from the easiest to the more difficult; thus, they are approximately in the order in which they may be taught. Most of these should be repeated several times, as desired by the teacher.

Low Level

DOG WALK. With hands and feet on the floor, walk like a dog. As a progression, run in the same position.

BEAR WALK. With hands and feet on the floor, walk like a bear, keeping arms and legs straight.

ROBIN HOP. From standing position, hands on hips, hop forward on toes, keeping feet together, pretending to be a robin.

RABBIT HOP. From a squat position with hands on floor in front, hop forward imitating a rabbit: jump feet forward to hands, then jump hands forward.

LAME DOG. Place hands on floor and raise left leg backward. Walk forward imitating a dog walking on three legs. Repeat with right leg raised.

HEEL CLICK. Stand with feet apart. Jump upward, strike heels together, and land in same position.

chapter can be used for strengthening the abdominal muscles and for stretching the lower back. When using them for posture improvement, the back should be kept flat. Sit-up exercises performed with the knees bent are preferable in order to stress contraction of the abdominal muscles and to maintain a flat back. Lower-back strengthening exercises have also been described earlier in this chapter.

LATERAL DEVIATION (SCOLIOSIS). Lateral spinal deviations occur occasionally; these are usually accompanied by uneven shoulders. When present, the teacher should test to see if it is functional in nature by having the pupil hang relaxed by the hands from a bar. A functional curve disappears and is the only type the teacher should attempt to improve through corrective exercise. Structural curves, those that remain in the back when hanging relaxed from the bar, should be referred to the pupil's parents with the recommendation that a physician, preferably an orthopedic specialist, should be consulted.

Functional lateral curvatures can frequently be traced to poor posture habits. Sometimes, these are fashionable, as portrayed by movie and television stars; at other times, they are simply lapses into slovenly postural positions, such as slouching on one foot or leaning sideways when sitting at a desk in the classroom. Proper instructions on good posture habits with sound reasons for their practice should help in this situation.

Most functional scolioses are left total or C curves; this curve can be produced temporarily by standing with a book placed under the right foot. Two exercises for this left curve follow; for right curves, reverse the exercise for the opposite side.

1. *Trunk bends.* Standing position, feet apart, right arm over head and left hand against lower edge of ribs. Movement: Keeping trunk on a strictly lateral plane, flex strongly toward left side, using raised arm to stress movement and bracing firmly with hand against ribs.

2. *Creeping.* Position on hands and knees with thighs perpendicular to floor. Movement: Creep slowly forward against resistance of partner with right arm leading each time. (Resistance is applied by partner holding against thighs from rear.)

STUNTS AND TUMBLING

Stunts and tumbling activities constitute a very important phase of the elementary school physical education program. They may be used to develop the powers of neuromuscular coordination, suppleness of body, and such physical fitness components as muscular strength and muscular endurance. They require precision of movement and exact body control, which have good self-disciplinary benefits as the child seeks perfection in activity.

WHEELBARROW. Place hands on floor with legs around partner's waist, partner, standing, grasps legs above knees. Walk about in this position. As a progression, partner grasps ankles when walking. Wheelbarrow races can be added later.

HAND BRIDGE. Lie on back, feet drawn close to body; place hands, arms downward, back of shoulders. Raise body, supporting it on hands and feet, forming a bridge.

FROG STAND. Take squat position; place hands flat on floor with elbows inside and bent to press against knees. Lean forward, slowly transfer body weight onto bent elbows and hands until feet are clear of floor.

CARTWHEEL. Take a sidestride position. Perform a cartwheel by quickly performing the following movement in succession: swing left arm upward; swing left arm to sideward position, raising the right arm to an upward position; bend trunk to left, swinging right leg sideward and upward; support body weight on left arm as right foot swings from mat; continue circle sideways overhead with feet spread, supporting body weight on right arm, then on right leg, and finally on both feet in an erect position.

FORWARD ROLL. Squat at edge of mat; hands placed on mat, shoulder-width apart and with fingers pointing straight ahead. In a continuous movement, tuck in head with chin close to chest and round back; push with feet and roll over, taking body weight on hands and carrying it forward until shoulders, back, and hips touch mat. As a progression, start the forward roll from a standing position and end with a stand; further, two or more rolls may be performed in succession.

BACKWARD ROLL. Stand with back to one end of mat. In a continuous movement, drop to sitting position on mat; draw knees to chest and tuck in head with chin close to chest; roll backward; throw hands overhead and alongside head and push on them to assist in completing the roll. (Be sure to keep head well forward during roll.)

FOOT WEAVING. This stunt is interesting and requires some coordination. Stand pigeon-toed (that is, toes touching, heels apart). Pivot on right heel and left toe, bringing heels together; pivot on left heel and right toe, bringing toes together. Continue to the right; then reverse to the left.

MULE KICK. From standing position, place both hands on floor and kick feet high; when feet reach maximum height, snap them back while at the same time pushing with hands so as to end standing erect.

LEG DIP. Extend one leg and both hands forward. Slowly bend the knee of supporting leg until seat touches heel; return to starting position without losing balance or touching floor. Perform same stunt with opposite leg.

KNEE DIP. Bend left knee; grasp instep of foot behind body. Using right arm for balance, slowly bend the right knee until the left knee

ANKLE-GRASP WALK. Bend at hips and grasp ankles. Walk in a straight line, keeping knees as straight as possible.

ANKLE-GRASP HOP From a squat position, grasping ankles, hop forward several times without breaking ankle grip. Turn around and repeat.

SIDE HOP. From a standing position, hands on hips, hop on both feet from side to side, keeping head and upper body as nearly as possible over original spot.

LOG ROLL. Lie across one end of mat with arms stretched overhead. Roll over and over evenly in one direction by twisting shoulders and hips.

HEEL SLAP. From standing position, jump high, raising both heels behind body; slap heels with hands.

SEAL CRAWL. Stretch body along floor with weight supported on hands and with elbows straight. Keeping elbows straight, move along floor, taking short steps with hands, pulling body forward and dragging toes.

CRAB WALK. Take squat position, reach arms backward and put hands on floor; raise hips so back is parallel with floor. With head, neck, and body in a straight line, walk in this inverted position. As a progression, run in the same position.

BENT-KNEE WORM WALK. Squat with hands on floor in front of feet. With feet fixed in position, walk hands forward until body is in a straight line from head to heels, then, walk feet forward to hands until body is in the squat position again.

STRAIGHT-KNEE WORM WALK. Standing, place hands on floor keeping knees as straight as possible. Walk hands forward until body is fully extended; then walk feet forward to hands until body is in the starting position.

HUMAN ROCKER. Lie face down, reach back and grasp ankles. Rock body back and forth keeping knees wide apart.

KNEE RISE. Standing position. Kneel to floor without hands touching any object, including the floor; by throwing body forward, return to standing position.

CROSS-LEG STAND Standing position, feet crossed, arms folded across chest. Sit down slowly on heels without losing balance (Turk fashion); stand again from this cross-leg position.

CHINESE RISE. Partners of equal size and height stand back to back with elbows locked. Lower body to sit down; rise to standing position.

MODIFIED FORWARD ROLL. Squat with feet apart, hands on mat or rug between feet, finger tips toward each other. Roll body forward and over by touching head to hands.

Middle Level

COFFEE GRINDER. Place right hand on floor, arm straight, and body straight on plane with extended arm. Walk around pivot hand, keeping head well back and body straight. Repeat with other hand.

supported by partner's hands; kick to a balance with the feet overhead, head up, knees straight, body arched, and toes pointed. Spotters are needed on either side for this stunt.

CARTWHEEL-ROLL SEQUENCE. Execute continuously a cartwheel, then a one-quarter turn facing starting position, and end with backward roll to headstand.

FORWARD-BACKWARD ROLL SEQUENCE. Execute continuously two forward rolls and a backward roll to headstand. (Other sequence can be worked out by the teacher and pupils.)

DIVE ROLL. From a running start, take off from both feet and dive through the air, ending in a forward roll (short distances at first). In performing the dive, the hands should contact the mat first, taking the force of the dive and carrying the forward momentum of the body over the bent head so that the back of neck and shoulders strike the mat as in the forward roll. (By placing one or more persons across mat face down, the pupil can dive over them.)

TURN OVER. Take a front leaning rest position (on hands, arms straight, and balls of feet, body straight). Turn over, using the hands only, while maintaining a straight body. In doing this stunt, lift one hand, turning the body at the same time so that back is toward the floor; quickly place lifted hand on floor for support; continue by raising the other hand off the floor, turning the body so that body returns to the starting position. Return by reversing direction.

BACK SPRING. Partner takes a position on hands and knees across mat. Take a short run, place hands on mat near partner's body, execute a forward roll over his back, and attempt to land on feet. (This stunt may also be executed over a rolled mat.) For the more skilled boys and girls, progression from this exercise may include learning headsprings and handsprings; however, experienced spotters are necessary when these performances are being attempted.

HANDSTAND. Place hands on floor, shoulder-width apart, fingers spread and pointing straight ahead; bring one foot, with knee of leg bent, close to the body, elevating the hips; keep arms straight and shoulders forward over hands; kick up with other leg, pushing with the bent leg; both legs are thrown over head with balance maintained on the hands; the back should be arched, head up, feet together, and toes pointed. A variation is to walk from the hand-stand position. Spotters are needed on either side to aid in learning this stunt.

Teaching Suggestions

A number of suggestions may be made to help the classroom teacher in presenting stunts and tumbling activities as a part of her physical education program. Certain of these suggestions follow.

FACILITIES AND EQUIPMENT. Tumbling and stunts do not require extensive facilities and equipment. A gymnasium, of course, is most de-

touches floor; return to erect position without releasing held foot. Perform same stunt with opposite leg.

HEAD STAND. Squat and place hands on mat. Place crown of head on mat, about one foot in front of hands; raise feet overhead, supporting body weight on triangle formed by hands and head; arch back, keep legs extended and together, and point toes. (Assistance by a partner will be needed in learning this stunt.)

LEAPFROG WITH ROLL. A partner bends over, knees slightly bent and with hands resting on them for support. Perform a leapfrog (straddle vault) over partner's bent back; when feet touch mat, go immediately into a forward roll.

SIDE ROLL. Take a position on hands and knees. By dropping shoulder and tucking under both elbow and knee on rolling side, roll over side-ward, returning to hands-and-knees position.

Upper Level

WRESTLER'S BRIDGE. Lie on back, feet drawn close to body; place hands, arms downward, back of shoulders. Raise body, supporting it on hands and head forming a bridge; use hands for balance only, if necessary.

TOE JUMP. Hold either foot in front with opposite hand. Jump through the loop made by arm and leg. Repeat with other foot.

STICK JUMP. Hold a stick in front of body with hands hip-width apart. Jump over stick and back without releasing it.

OVERHEAD JUMP. Partner stands braced with one foot forward, knee bent slightly, and hands clasped together over thigh. Take short run, place right foot in clasped hands and rest hands momentarily on partner's head; partner lifts with his hands as vault is continued over his head.

KNEELING JUMP. From kneeling position on both knees with toes flat on floor, jump to the feet.

CRANE DIVE. Use an object such as a folded sheet of paper placed so that it stands upright on floor. Stand on one foot; bend over and pick up paper with teeth; use arms and free foot to maintain balance. Repeat with other foot.

ESKIMO ROLL. Partner One lies on his back; partner Two stands with feet straddling One's head, facing his feet; One brings his feet to a vertical position; each grasp the other's ankles. Holding ankles throughout, Two does a slow forward roll, pulling One to the upright position; then, One does a slow forward roll, and so on. As a progression, this roll may be done keeping legs straight.

KNEE AND SHOULDER BALANCE. Partner lies on back with knees well bent and feet flat on floor; his hands are stretched up and forward ready to support his partner's shoulders. Take position in front of partner's bent knees and place hands on his knees, lean forward so shoulders are

5. Describe and demonstrate each stunt. Help individual pupils who have difficulty in learning a particular stunt. Such help consists merely of pointing out a mistake made; or it may involve actual physical help in performing the movement, such as for the forward and backward rolls and headstand.

6. At first, the children should work primarily toward the successful completion of a given stunt. Once the stunt has been mastered, stress should be placed on form and a polished performance.

7. For a great many of the stunts described, so-called "spotters," who guard the performer from falling, are not needed. However, in others, such as headstand, head spring, and handstand, spotters are essential. *Of course, advanced stunts should not be taught to a child until he has progressed to the point where he is ready for them.*

8. Do not permit "horseplay," ridicule, or distractions. The children should have fun from tumbling, and they will if they are kept busy and if the instruction is informal. Children should respect the efforts of their classmates and should be encouraging to those who are trying the various stunts.

9. Evaluate progress. For motivational purposes, and as an evaluation process, a check list of stunts should be kept. When a child succeeds in doing a stunt, mark an X for him on that stunt; when he has developed good form in doing the stunt, draw a circle around it, as (X).

10. The child who has great difficulty in learning stunts and who makes only limited progress as a consequence, may be one who is subpar in basic physical fitness elements. Especially, he may lack the muscular strength to master stunts after a reasonable effort. Special conditioning exercises should be stressed with such children. In Chapter 7, suggestions were made for meeting the physical fitness needs of boys and girls.

APPARATUS ACTIVITIES

Exercises on apparatus have the same values for elementary school boys and girls as do stunts and tumbling. In addition, they make strong demands on the arm and shoulder-girdle muscles. In fact, children must have a fair amount of strength to play and perform on such apparatus, as usually the full body weight must be held or supported and then maneuvered in various ways. Climbing apparatus particularly has a great appeal to boys and girls. In an earlier day, children climbed trees or climbed about on the rafters of barns; today they must rely on jungle gyms and other such contrivances.

Pieces of apparatus may be placed inside in a gymnasium or outside on a playground. They may be purchased commercially or may be improvised and made locally by the school's wood-shop department or the

sirable. However, these activities can be conducted in a playroom, on a corner of the playground, or in the classroom, especially if the desks can be moved to the sides. Gymnasium mats are excellent, and, actually, are needed for some of the advanced tumbling stunts. However, most of the activities presented above can be done without them. Possibly, small rectangular rugs or pieces of heavy canvas would be useful for some of the rolling stunts.

PUPIL LEADERS. In the final chapter of this book, some attention will be given to the use of pupil leaders in assisting the classroom teacher with her physical education program. Suffice it to say here that excellent use can be made of such leaders in presenting stunts and tumbling. Many classroom teachers may lack the skill to demonstrate these activities; others may have reached an age where the desire to demonstrate has dwindled. Rather than abandon this phase of the physical education program for one of these reasons, the benefits of this highly desirable type of activity can still be realized by utilization of pupil leaders to demonstrate and otherwise help with this instruction.

FORMATIONS. A number of different formations are possible for organizing the class for stunts and tumbling. Where the classroom teacher must teach the class as a whole without assistance, some sort of mass arrangement would be desirable; these arrangements could be similar to those described for conditioning exercises earlier in this chapter. The teacher can describe the stunt or tumbling activity, while one of the more skillful pupils in the class does the demonstrating.

Where pupil leaders are utilized, a good arrangement is to set up different squad stations in the exercise area. A pupil leader is assigned to each station, at each of the stations, different stunts are presented. The children rotate from one station to the next so as to participate in all stunts during one or more physical education periods.

METHODOLOGY. Various procedures may be followed in the effective teaching of stunts and tumbling, as follows:

1. Form squads of boys and girls of comparable abilities in the performance of stunts, so that a reasonably common level of instruction is possible within each squad. In this manner, stunts and tumbling may be adjusted readily to the level of the performers' abilities.
2. Keep squads small, not exceeding five or six children each, if possible. By so doing, the children will be kept much more active and will get greater benefits from the activity. Large squads require longer waits for turns, less activity, and a greater chance for "fooling around."
3. Provide some warm-up activities before the start of this instruction. Warm-up was considered earlier in this chapter under "conditioning exercises."
4. Review former, learned stunts periodically as a lead-up to presenting new and more difficult ones.

different heights; in general, the heights should be from six inches to a foot higher than the children can reach from a standing position. In starting each of the following stunts, stand directly below the bar; crouch moderately with arms swung backward and low; look up at the bar; swing the arms forward and upward, jumping upward from the feet; grasp the bar with both hands, palms facing forward. In grasping the bar, the thumb should circle around to join the fingers. In dismounting, drop lightly to the ground, letting the knees and ankles give with contact to the ground.

HANGS. Simple hangs with arms straight may be done on the horizontal bar, as follows:

1. Hang with body straight and motionless, toes pointed, for varying lengths of time.

2. Hang and bring one or both knees up; hold this position.

3. Hang and raise one or both legs straight out in front, at right angles to body.

4. Hang from one arm and one leg.

5. Bring legs up, hook them over the bar, and hang from knees.

6. Skin the cat: bring the knees up to the chest while hanging; continue on over backward, return without releasing hold on bar.

SWINGS. Swings from the horizontal bar may be done from the hands or the knees.

1. *Hand swings.* Swing back and forth a varying number of times. The following three dismounts may be used: stop swing and drop to ground; dismount at end of back swing; dismount at end of front swing. After pupils are skilled in swinging, they can try for distance in their backward and forward dismounts.

2. *Knee swings.* Swing from knee hang. When skill is adequate, dismount when head is at highest point of forward swing, landing on feet.

Exercises. Chin the bar as many times as possible; keep track of number of times and try to increase the number each time. Another exercise is to raise body by arms until chin is at bar level and hold this position as long as possible.

Overhead Ladder

The overhead ladder is a sturdy ladder, mounted horizontally at a height from six inches to one foot higher than the children can reach from a standing position. Mounting and dismounting from the ladder should be similar to the same operations on the horizontal bar. Also, several of the stunts described for the horizontal bar can be done on the ladder. The overhead ladder permits a number of interesting traveling stunts, as shown below.

FORWARD TRAVEL. A variety of forward-travel stunts can be utilized as follows:

school's maintenance workers. Dismountable horizontal bars may be bought or rigged locally in doorways. In this chapter, exercise on the most common and easily acquired pieces of apparatus for the elementary school will be considered, these pieces will be the horizontal bar, over head ladder, and climbing ropes. In addition, however, the playground should be equipped with climbing apparatus, such as jungle gyms, with other overhead apparatus, such as climbing ropes, with balance beams for balance exercises, with parallel bars for arm and shoulder extension exercises, and the like.

Ample evidence exists that arm and shoulder-girdle weakness is prevalent among boys and girls in the United States. This widespread deficiency of our youth became obvious to the armed forces as a result of the motor fitness testing of draftees during and since World War II. Further, most classroom teachers have observed that many boys cannot and few girls can chin themselves. Thus, the teacher should place some stress on the development of arm and shoulder-girdle strength and endurance as a part of her physical education program.

In the use of conditioning exercises and of stunts and tumbling, primary emphasis is placed on the development of the arm and shoulder-girdle extensor (pushing) muscles. This is largely the result of the nature of these activities, as exercises and stunts which require pushing from the floor or supporting the body weight with the pushing muscles are much easier to devise and have greater variety than do pulling exercises. Pulling exercises frequently require another person or must utilize apparatus, such as a horizontal bar when chinning. For this reason, the selection of pieces of apparatus requiring pulling the body or supporting the body by use of the pulling (flexor) muscles is justified in this book. This does not mean that pieces of apparatus which necessitate use of the pushing muscles should not be used—far from it, as these have definite physical education benefits. Further, apparatus gymnastics on the parallel bars, the gymnasium horse, the horizontal bar, the flying rings, and so forth, have great value for boys and girls; however, the presentation of these activities requires the services of a professionally trained physical education teacher.

Apparatus exercises may be utilized routinely to end each physical education period, or they may be incorporated into the day-to-day physical education program. In the presentation to follow, each of the selected pieces of apparatus will be considered in turn. The classroom teacher will need to select those activities which are within the abilities of her pupils.

Horizontal Bar

Horizontal bars should be installed on the playground in sets of three. These bars should either be adjustable as to height or be of

CLIMBING TECHNIQUES. Climbing the rope should be reserved for those children who have the strength to do so safely; readiness for rope climbing should be demonstrated by ability to do pull-up and hang exercises and stunts described above. Before attempting climbs, the techniques of climbing and descending the rope should be thoroughly taught.

1. *Scissors grip.* The scissors, or crossed-foot, grip is the basic rope-climbing technique. This technique is performed as follows: From a standing position, grasp rope as high as possible, raise one leg behind, knee bent; place rope inside of the knee and outside the foot of the raised leg, cross the other leg over in such a manner as to secure the rope when both legs are straightened.

2. *Climbing.* From the scissor-grip position, bring both knees high, with rope sliding between them and with the hands supporting the body; hold the rope tight with the legs and raise one hand alternately over the other until the body is straight; repeat process.

3. *Climber's rest.* The child may easily rest during a climb by wrapping the rope completely around one foot from the outside; by standing on the rope with the other foot at the point where it crosses the instep, slippage can be prevented.

4. *Descending.* Several methods of descending the rope are possible. However, only two of these methods will be described here. (a) *Scissors descent:* This descent is the reverse of the scissors climb. (b) *Climber's rest descent:* From the climber's rest position, lower body hand-under-hand until knees are near chest; release pressure on rope across instep, permitting the feet to slide to a lower position; repeat process. Sliding rapidly down the rope should be avoided, as rope burns may result; further, jumping when part way down may be dangerous and may cause injuries.

CLIMBING. Rope climbs should, of course, start with the scissors technique; a much more difficult form of rope climbing is to ascend the rope without use of the legs and feet. Initial climbs should be for short distances; for example, climb one-half the way, three-fourths of the way, and finally all the way. Later, climbing for time may be added and individual records may be kept as a form of self-testing activity.

SWINGS AND VAULTING. When safe to do so, swinging on the rope may be added. Swings may be accomplished from running starts or from a standing start on a high support. Jumps for distance or vaults over high-jump standards may be added and individual records kept.

Teaching Suggestions

The teaching suggestions for apparatus activities are similar to those made for stunts and tumbling. Thus, pupil leaders may be used effectively; groups of comparable abilities may be formed; warm-up should precede work; exercises and stunts should be described and demon-

1. *Straight travel.* Mount the first rung, facing down the ladder, body hanging free, reach forward and grasp the second rung by one hand; bring the other hand up, continue one rung at a time for the length of the ladder. When skill and strength permit, travel by grasping the second rung with one hand; then bypass this one with the second hand, grasping the third rung, and so on down the ladder.

2. *Hand jumping.* Mount the first rung, facing down the ladder; propelled by the arms, jump to the second rung with both hands; continue the length of the ladder. Advanced performers will be able to skip one or more rungs in this fashion.

3. *Side-rail travel.* Forward travel may also be done by grasping both side rails, instead of the rungs as above.

4. *Monkey crawl.* Mount underneath the bar with the hands and feet; move forward and backward like a monkey.

SIDE TRAVEL. Mount the end of one side rail of the ladder; travel side-ward by hand along the length of the ladder. In this travel, start by sliding the leading hand along the rail and then bringing the other hand up to it. Later, side travel can be performed hand-over-hand.

Climbing Ropes

Climbing ropes offer another excellent piece of apparatus for the development of the arm and shoulder-girdle muscles. Certain of the exercises and stunts used do not involve actual climbing, as climbing must be reserved for those pupils with adequate strength to do it. Following are some of the possibilities for this type of activity.

PULL-UPS. Simple pull-ups may be done from the floor, or more difficult pull-ups may be executed higher up the rope.

1. *Pull-ups from floor.* Pull-up from lying to sitting position. Pull-up from sitting to standing position. Pull-up from lying to standing position.

2. *Pull-ups off floor.* From standing position, jump up and grasp rope, feet well off the floor, pull-up and lower body several times from this position.

HANGS. Hangs may also be done starting with feet on the floor or may be executed with feet off the floor.

1. *Hangs from floor.* From standing position, reach as high as possible and grasp rope; pull body up to a bent-arm hang; perform such exercises as: (a) raise and lower one or both knees; (b) raise and lower legs, knees straight, first with rope between legs and then with rope either side of legs; (c) perform bicycle or scissors movement.

2. *Hangs off-floor.* Jump up and grasp rope, feet well off the floor; pull body up to a bent-arm hang; perform same exercises as for "hangs from floor."

3. *Inverted hand.* Jump to bent-arm hang; swing the feet over the head so that hands are grasping rope between the legs.

CLIMBING TECHNIQUES. Climbing the rope should be reserved for those children who have the strength to do so safely; readiness for rope climbing should be demonstrated by ability to do pull-up and hang exercises and stunts described above. Before attempting climbs, the techniques of climbing and descending the rope should be thoroughly taught.

1. *Scissors grip.* The scissors, or crossed-foot, grip is the basic rope-climbing technique. This technique is performed as follows: From a standing position, grasp rope as high as possible, raise one leg behind, knee bent; place rope inside of the knee and outside the foot of the raised leg, cross the other leg over in such a manner as to secure the rope when both legs are straightened.

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3. *Climber's rest.* The child may easily rest during a climb by wrapping the rope completely around one foot from the outside; by standing on the rope with the other foot at the point where it crosses the instep, slippage can be prevented.

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SWINGS AND VAULTING. When safe to do so, swinging on the rope may be added. Swings may be accomplished from running starts or from a standing start on a high support. Jumps for distance or vaults over high-jump standards may be added and individual records kept.

Teaching Suggestions

The teaching suggestions for apparatus activities are similar to those made for stunts and tumbling. Thus, pupil leaders may be used effectively; squads of comparable abilities may be formed, warm-up should precede apparatus work; exercises and stunts should be described and demon-

strated; progress should be evaluated and individual records should be kept, and, for those who have great difficulty in working on the apparatus, physical fitness status should be checked. As for stunts and tumbling, too, many of the exercises and stunts do not require "spotters," as little or no danger from injury is present. However, in others, especially the inverted hangs, the climbs, the swings, and swinging and knee dismounts from the horizontal bar, spotters are essential. A most important precaution is always to keep the child's activities regulated to his ability to perform.

SUMMARY

In this chapter, the following six types of physical education activities for elementary school children were presented: conditioning exercises, circulatory endurance conditioning, group conditioning activities, posture improvement, stunts and tumbling, and apparatus activities. These activities have primary value for the development of muscular strength, muscular endurance, and circulatory endurance. Certain of the activities also contribute to neuromuscular coordination, bodily poise and grace, and efficiency of movement of boys and girls.

In presenting each type of activity, a practical approach was made, so that the classroom teacher would be provided with specific material she can use in her physical education program. Thus, the use of each type of activity for the benefit of elementary school children is discussed. A great many specific exercises and stunts are described. Levels of difficulty are established, when necessary, as low, middle, and high; however, stress is placed on individual differences which permit children in the same grade to cross exercise-level lines. Teaching suggestions are made throughout the chapter.

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- Clarke, H. Harrison and David H. Clarke, *Developmental and Adapted Physical Education*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.
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Chapter

9

Games and Sports

IN THIS CHAPTER, games and sports are presented which may be used by the elementary school classroom teacher for her physical education program. As was done for exercises, stunts, and apparatus activities in Chapter 8, three levels of intensity and intricacy are utilized rather than arranging activities by grade as is commonly done. These levels and the grades associated with them are: *low level*, grades one and two; *middle level*, grades three and four; and *high level*, grades five and six.

It should be stressed again that the selection of physical education activities should be based upon the capabilities of boys and girls, using their grade in school as a point of reference. Thus, adjustments should be made for the different grades within each level, and crossing of level lines should be freely done when pupils' capabilities justify it.

Within each of these levels and for each type of activity, the games and sports have been arranged roughly in order of difficulty. Thus, some progression may be realized by following the order. Some activities that follow others, of course, may be approximately the same in difficulty. It may be said, too, that the children's interest in a popular game of a lower level may continue into an upper level; such games may logically be continued until supplanted in interest by more advanced games.

SELECTION

The appeal of games and sports to young children is universal. To realize how universal this appeal is, one has only to observe boys and girls during their free time after school, during weekends, and on vacations. They readily organize for play, select and adapt games to their capabilities, arrange competing teams reasonably close to abilities, and

strated, progress should be evaluated and individual records should be kept; and, for those who have great difficulty in working on the apparatus, physical fitness status should be checked. As for stunts and tumbling, too, many of the exercises and stunts do not require "spotters," as little or no danger from injury is present. However, in others, especially the inverted hangs, the climbs, the swings, and swinging and knee dismounts from the horizontal bar, spotters are essential. A most important precaution is always to keep the child's activities regulated to his ability to perform.

SUMMARY

In this chapter, the following six types of physical education activities for elementary school children were presented: conditioning exercises, circulatory endurance conditioning, group conditioning activities, posture improvement, stunts and tumbling, and apparatus activities. These activities have primary value for the development of muscular strength, muscular endurance, and circulatory endurance. Certain of the activities also contribute to neuromuscular coordination, bodily poise and grace, and efficiency of movement of boys and girls.

In presenting each type of activity, a practical approach was made, so that the classroom teacher would be provided with specific material she can use in her physical education program. Thus, the use of each type of activity for the benefit of elementary school children is discussed. A great many specific exercises and stunts are described. Levels of difficulty are established, when necessary, as low, middle, and high; however, stress is placed on individual differences which permit children in the same grade to cross exercise-level lines. Teaching suggestions are made throughout the chapter.

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To help the classroom teacher in presenting the games phase of the physical education program, the following suggestions are made:

1. Know the game well before teaching it. The rules of games for younger children are quite simple and can be easily grasped. However, for the older children, game rules become more complex and, in some instances, quite intricate; *these naturally require more study in order to acquire thorough familiarity with them.*

2. When needed, provide ample equipment for the games, such as balls, bats, and so forth. This equipment should be ready in advance to avoid loss of playing time. An equipment cabinet, adequately stocked and readily accessible to the teacher, would be a great help. Enough equipment should be available so that all children can be active; practice sessions usually need more equipment than the game itself, and small groups can be formed for this purpose.

3. See that lines are marked on play areas in advance, when needed for the game. When the same markings are frequently used, permanent lines can be placed on outdoor courts or gymnasium floors.

4. Get the class into the formation needed for playing the game before explaining it. If this separates groups too far for teaching, bring them closer together but maintain their relative positions. Give the most essential directions first, then add others as needed.

5. *Demonstrate the game or have the pupils practice it briefly. Then, allow the pupils a chance to ask questions before continuing. However, keep talking time at a minimum and playing time at a maximum.*

6. Stop the game and clarify the rules further if they are still not clearly understood. In doing so, get the attention of all pupils at once before making explanations or answering questions; this will save a good deal of repetition. A whistle blast, or some other easily heard signal, by the teacher could be used as a clear indication for all pupils to cease activity and pay attention to the teacher; this will be a real time-saver in presenting general class instructions.

7. Rules are essential for the orderly playing of games. However, generally speaking, they should be kept at a minimum. The essential rules of a game should be made clear to the class and, thereafter, should be enforced. An important lesson for children to learn is to accept the rules as established, strive to play within them, and accept readily penalties for their infractions.

8. Where desirable, form two or more groups for playing a game so as to increase pupil participation to a maximum. Where there is a good deal of standing around and waiting by pupils in playing a game and where this is due to an overly large number of players, the formation of additional groups is indicated.

9. Change the game when pupil interest in it lags. Thus, the teacher should be prepared to make game changes within the same period when

play on with great persistence. They want a challenge and a goal; they do not relish games where they are forced to stand around and wait for lengths of time. The classroom teacher can learn many a lesson for application to her physical education from these observations of children unconsciously enjoying themselves through informal participation in games.

Games and sports can be utilized to realize most if not all the objectives of physical education if they are selected and presented in accordance with the outcomes desired. Thus, games involving body contact frequently develop muscular strength and muscular endurance; games requiring sustained running improve circulatory endurance; competition through games may contribute to personal and social adjustments; and many games have value for recreational use. Further, play activities may provide for emotional expression and release; they should consistently help children meet their basic needs for approval, affection, emotional response from others, and group acceptance and status. Play activities permit children to release their tensions in socially acceptable ways.

The selection of games included in this book was based primarily upon the following criteria:

1. Must require vigorous activity. Thus, games of a strictly social or party nature were eliminated.
2. Must be reasonably continuous. Therefore, games which require regular periods of inactivity by the participant were not included, with the exception of some ball games at the upper levels.
3. Must be of sufficient variety in nature to permit appropriate selections by the teacher in order to realize the various objectives of physical education.
4. Must be interesting and challenging, so that the children will naturally participate in them fully and enthusiastically.
5. Must be appropriate to the capabilities of elementary school children.
6. Must provide for progression from simple to complex.
7. Must provide variety so that the teacher can vary her selection in accordance with changes in pupil interest.

PRESENTING GAMES

As a matter of course, the teacher should be well prepared to present games effectively in her physical education program so that maximum benefits will result. The games period should be much more than just a relaxation or recreation—a recess—period; it should be approached as a laboratory in which games are selected and presented in order to realize educational objectives. Further, it can provide an excellent experience in democratic human relations and should be fostered as such.

POLICEMAN. Act out the things policemen do, such as directing traffic, patrolling a beat, looking for a lost child, chasing a thief, and catching the thief.

DAY AT THE ZOO. Act out the trip to the zoo; imitate the various animals, birds, snakes, and so on, found at the zoo; return home.

CHRISTMAS. Act out waking up Christmas morning, getting the stockings from the fireplace, and seeing the tree (dance around the tree); imitate toys, such as wooden soldiers, bicycle, jumping jack, dancing doll, rocking horse, top, train, and other presents received.

Tag Games

Simple Tag

VALUE. Vigorous running, speed, dodging.

EQUIPMENT. None.

PLAY AREA. Mark out within the play area boundaries beyond which the players may not go to avoid being tagged. The smaller the group, the smaller the play area should be. For example, a space approximately 50 feet square would be about right for a group of 10 to 15 children, although no rigid rule need be applied.

GAME DESCRIPTION. A player chosen to be *It* attempts to tag any one of the other players. The player who is tagged becomes *It* and immediately attempts to touch the same or another player without stopping the game. The game, then, is vigorous, continuing without a break.

Cross Tag

Cross Tag is similar to Simple Tag, except for the following: When *It* starts to chase a player, he must continue until the player is touched or crossed. Any player may cross between *It* and the fleeing player; or, the fleeing player may run around another player sufficiently far to result in a cross. When either of these happens, *It* must change and chase the other players.

Squat Tag

Squat Tag is similar to Simple Tag, except that players may avoid being caught by assuming a squat position. This tag game may be varied by touching the floor or clasping ankles.

Partner Tag

VALUE. Vigorous running, agility, simple player cooperation.

EQUIPMENT. None.

PLAY AREA. Use boundary lines as for Simple Tag.

GAME DESCRIPTION. All players but two form pairs by linking elbows. One of the two extra players is *It* and the other is to be chased. The

considered desirable. Another time for changing games is when a vigorous game is too long continued and the children become unduly fatigued; such games should then be alternated with milder ones.

10. Use pupil leaders effectively. As was suggested for the conduct of stunts and apparatus activities in Chapter 8 and as developed further in the final chapter of this book, pupil leaders may also be used to assist the classroom teacher in presenting and conducting the games phase of the physical education program.

LOW-LEVEL GAMES

The low-level games, normally for children in grades one and two, selected for this book are of four types, as follows: (1) Story plays; (2) tag games, necessitating individual performances, where the child is "It," thus occupying the center of the stage; (3) mass games, involving a minimum of cooperation among players, yet providing some feeling of participating in a group effort; and (4) simple sports skills, requiring passing or kicking balls or other objects.

Story Plays

Story plays may be used to foster the child's transition from the fantasies of childhood to the tag and mass games of the early school years. When the child is permitted his own expression, such play can provide an outlet for his imaginative, imitative, and individualistic feelings. Further, this type of physical education can be integrated effectively into other class activities of the primary grades, as the classroom teacher will readily realize.

Story plays may be developed in a variety of ways. They may be centered about the following: objects, people, and events in the environment; incidences or events encountered in classroom reading and other studies; holidays and other national, state, and local observances; special interests of the school and community; and the like. Several suggestions for story plays are made here to give the teacher an idea of the possibilities of this type of physical education activity. A definite value which may be realized from story plays is for the children to develop their own with the guidance of the teacher. This activity is well adapted for use in the classroom. *Emphasis should be placed on keeping the story plays physically vigorous.*

MOTHER'S HELPER. Imitate ways the children help mother in the home, such as mopping the floor, running the vacuum cleaner, picking up toys and putting them away, making beds, running errands, carrying groceries, and shoveling snow from the sidewalk (although this may be Dad's job).

player is the tail; a Broncho is formed by their clasping each other around the waist (with exception of the "head"). *It* tries to tag the Runner. The Runner can avoid being tagged by getting hold of one of the Broncho's tails; the Bronchos try to avoid this by twisting and turning. As soon as he grasps the waist of a third player (the tail), he becomes the tail and the head becomes the Runner. If the Runner is tagged, he becomes *It* and *It* becomes the Runner; the game continues without a break.

Horse and Rider Tag

VALUE. Vigorous conditioning, strength, and endurance.

EQUIPMENT. None.

PLAY AREA. Use boundary lines as for other tag games.

GAME DESCRIPTION. The class is divided into pairs; each pair should be of comparable size. One of each pair is the Horse and the other is the Rider; each Rider mounts the back of his Horse, with feet around his waist and hands and arms grasping shoulders. One Horse and Rider is designated as *It* and attempts to tag any one of the other pairs. The pair tagged becomes *It* and immediately attempts to touch the same or another player without stopping the game. The Horse and Rider of each pair may exchange positions at will, but may be tagged in doing so if not careful.

This tag game is especially vigorous and may become a bit rough if not controlled by the teacher. It is probably more appropriate for boys than for girls. Further, it would probably be better to delay its use until the middle level is reached.

Mass Games

Cowboys and Indians

VALUE. Speed, running, dodging, alertness.

EQUIPMENT. None.

PLAY AREA. Mark off two parallel goal lines 40 to 75 feet apart, depending upon the available space. About 4 feet inside each goal line, mark a restraining line. Boundary (side) lines may also be desirable in order to restrict the players.

GAME DESCRIPTION. Divide the class into two equal groups, called the Cowboys and the Indians. To start the game, the Cowboys stand along their goal line, with their backs toward the play area (no peeking). The Indians quietly creep to the Cowboys' restraining line. When all have one foot on this line, the leader yells "Indians." The Cowboys then turn and chase the Indians back over their goal line; any Indian tagged before reaching his goal line becomes a Cowboy. The Indians now have their turn, and the roles of the two groups are reversed; the leader calls "Cowboys" when all Cowboys have one foot touching the Indians'

player being chased may avoid being touched by linking elbows with one of the paired partners, this causes the other partner to become the runner. When *It* tags a runner, they immediately change roles and the game continues without a break.

Group Tag

Group Tag is similar to Partner Tag, except that groups of three to five players link elbows.

Nose and Toe Tag

VALUE. Vigorous running, speed, dodging.

EQUIPMENT. None

PLAY AREA. Mark out within the play area boundaries beyond which the players may not go to avoid being tagged. The smaller the group, the smaller the play area should be. For example, a space of approximately 50 feet square would be about right for 10 to 15 children, although no rigid rule need be applied.

GAME DESCRIPTION. A player chosen to be *It* attempts to tag any one of the other players. A player can avoid being tagged if he grabs his nose with one hand and his toe with the other. The player who is tagged before he can do this becomes *It* and immediately tries to touch the same or another player without stopping the game.

Link Tag

VALUE. Vigorous running, dodging, simple player cooperation.

EQUIPMENT. None.

PLAY AREA. Use boundary lines as for other tag games.

GAME DESCRIPTION. A player chosen to be *It* attempts to tag any one of the other players. When a player is tagged, he joins hands (or links elbows) with *It*. Keeping hands joined, they tag another player, who also joins the line. This process continues until the last player is tagged. This last player becomes *It* for the next game. If the link becomes broken in tagging a player, the tag does not count.

A variation of this game is to start with two players being *It*; the chain having the greatest number of players at the end wins.

Broncho Tag

VALUE. Vigorous running, dodging, some strength development, simple player cooperation.

EQUIPMENT. None.

PLAY AREA. Use boundary lines as for other tag games.

GAME DESCRIPTION. One player is chosen to be *It* and a second player is the Runner. The rest of the class is divided into groups of three. The first player is the head, the second player is the body, and the third

GAME DESCRIPTION. A Lion is chosen who stands in the den. The other players attempt to torment the Lion by running into or across his den or by placing a foot in it. The Lion attempts to tag his tormenters, but can only do so when they encroach on his den. The first one tagged becomes the next Lion.

Fish Net

VALUE. Speed, dodging, some strength, group cooperation.

EQUIPMENT. None.

PLAY AREA. Mark off two parallel lines 40 to 75 feet apart, depending upon the available space and the number of players. Boundary (side) lines may also be necessary in order to restrict the players.

GAME DESCRIPTION. Divide the class into two equal groups, one to be the Fish Net and the other to be the Fish. Each group stands behind its respective goal line. If there are ten or fewer players on a side, only one Fish Net should be formed; if more than ten players, form additional Fish Nets of six to ten players each. A Fish Net is formed by the players joining hands.

At the signal to start the game, both sides advance toward each other. The Fish try to reach the opposite goal without being caught, while the Net attempts to catch as many of them as possible by closing around them. The Fish may escape around the ends of the Net, but may not run through or under it. If the Net breaks by means other than force exerted by the Fish, the Fish may escape. The two groups alternate as Nets to see which one can catch the most Fish.

Follow the Leader

VALUE. Alertness; can be a vigorous activity.

EQUIPMENT. None.

PLAY AREA. No markings.

GAME DESCRIPTION. Divide the class into groups of eight to ten, by ability if possible, that is, the best performers in the first group and the poorest performers in the last group. Each group lines up behind a Leader. Each Leader starts moving through the play area by walking, running, or jumping, performs stunts, or moves in any way he chooses. The players in each line imitate their leader; they must change immediately and continue the movement or performance as long as he does. Anyone who fails goes to the end of the line. Leaders should be changed frequently.

Hopalong Cassidy and Roy Rogers¹

VALUE. Running, dodging, alertness.

EQUIPMENT. None.

¹ Leonard A. Larson and Lucille F. Hill, *Physical Education in the Elementary School* (New York: Holt, Rinehart & Winston, Inc., 1957), p. 241.

restraining line. The game continues until each has had an equal number of turns (say five or six); the side with the largest number of players at the end wins. If the game is repeated, the Indians should start with their backs toward the play area.

Cats and Dogs

VALUE. Speed, running, dodging, alertness.

EQUIPMENT. None.

PLAY AREA. Mark out boundaries approximately 40 x 60 feet, with a center line dividing the area into two parts 40 x 30 feet.

GAME DESCRIPTION. Divide the class into two equal groups, naming one of them Cats and naming the other Dogs. Each team lines up on its own end, or goal line. On a signal from the leader, the two groups start walking toward the center line. When close to the center line, the leader suddenly calls either "Cats" or "Dogs." The side called then chases the other side and tries to tag as many as possible before they reach their goal line. Players tagged in this process join the other team. The game continues for a set length of time; the side with the most players at the end wins. The leader should mix up his calls of "Cats" and "Dogs," so that the groups will not be able to anticipate which will chase or be chased.

Run, Rabbits, Run

VALUE. Speed, running, dodging, alertness.

EQUIPMENT. None.

PLAY AREA. Mark off rabbits' den large enough to contain one-half the class. The location of the den may be varied to add interest to the game.

GAME DESCRIPTION. Divide the class into two equal groups, called the Rabbits and the Foxes. The game starts with the Rabbits in their den and the Foxes scattered about some distance from the den. The Rabbits come out of their den to "play in the woods" and to "get food." They move about softly and cautiously, as they are afraid that the Foxes might catch them. The leader suddenly calls "Run, Rabbits, Run." This is the signal for the Foxes to try to catch the Rabbits. The Rabbits try to get back to their den, where they will be safe. All Rabbits tagged before reaching the den become Foxes for the rest of the game. The game continues until all the Rabbits become Foxes. Encourage the Rabbits to be daring and to venture well away from their den.

Lion's Den

VALUE. Dodging, alertness.

EQUIPMENT. None.

PLAY AREA. Mark off an oblong approximately 10 x 15 feet square to represent a lion's den.

3. Throw a ball underhand, then overhand; vary the distances.
4. Catch a ball which is rolled, bounced, thrown, or kicked.
5. Throw a ball at a stationary target; at a moving target.
6. Kick a ball from a stationary position, when rolled, when dropped.
7. Punch a ball held in one hand.
8. Bat a ball pitched underhand.

These young children should practice at first with a large rubber playground ball (8½ inches). An ample supply of balls should be available so that all children can be kept busy.

Roll Ball

VALUE. Ball handling.

EQUIPMENT. 6-inch rubber ball for each group formed.

PLAY AREA. No markings.

GAME DESCRIPTION. Form one or more groups, depending on the size of class, with 15 to 20 pupils in each group. Children in each group join hands in a circle around one child. The child in the center rolls the ball, attempting to make it go out of the circle. The children forming the circle try to prevent this by pushing the ball back into the circle with their hands or blocking (not kicking) it with their feet. The child who lets the ball go out of the circle between his feet or on his right then goes into the center to try rolling the ball out.

Ball Stand

VALUE. Ball throwing.

EQUIPMENT. 6-inch rubber ball.

PLAY AREA. Draw a circle 6 feet in diameter in the center of the play area.

GAME DESCRIPTION. Number the pupils of the class consecutively; each child must remember his number. The children cluster close to the 6-foot ring, with one foot touching it if space permits. A ball is placed in the center of the ring. The game is started by the teacher calling one of the numbers. The child whose number is called rushes to the center of the ring, picks up the ball, stands up straight, and yells, "Stand." In the meantime, all other children rush as far away from the ring as they can. At the command of "Stand," they must stop and stand where they are. The child with the ball throws it, attempting to hit any other child, who may dodge or twist to avoid the ball but must not move his feet.

Beanbag Toss

VALUE. Accuracy in tossing.

EQUIPMENT. Four beanbags for each group formed.

PLAY AREA. Draw two concentric circles; these circles should be 18 and 30 inches in diameter. A short tossing line is marked 8 feet from

PLAY AREA. Mark off two parallel lines, 10 feet apart, and two goal lines about 20 feet beyond each parallel line. The space between the center parallel lines is neutral territory.

GAME DESCRIPTION. Divide the class into two equal groups, called Hopalong Cassidy and Roy Rogers. Each side lines up on the center line away from their goal line; thus, they must cross the neutral territory in order to reach their goal. The leader calls either "Hopalong Cassidy" or "Roy Rogers." The side called must then try to reach their goal without being tagged by players on the other team. Those tagged must join their opponents. The teams return to their original places to continue the game. The leader should mix up the calling of the teams, so as to maintain an element of surprise.

To add interest, the goals may be called Corrals and the running area The Plains. Players may gallop as on horses instead of running.

Midnight

VALUE. Running, dodging, alertness.

EQUIPMENT. None.

PLAY AREA. Mark off boundary lines, approximately 40 feet by 75 feet. At one end, mark out a Fox's den; the other end of the playing area is the sheepfold (over that end line).

GAME DESCRIPTION. One player is the Fox; all other players are Sheep. At the start of the game, the Fox is in his den and the Sheep approach him as closely as they dare. They keep asking him: "What time is it?" The Fox may give any time, such as "One o'clock," or "Ten o'clock," or "Noon," and so forth; but when he answers "Midnight," the Sheep must run for the sheepfold, while the Fox chases them, tagging as many as he can. All Sheep tagged before they reach the sheepfold become Foxes and help to catch Sheep the next time; only the original Fox, however, answers the question, "What time is it?" The last Sheep caught becomes the Fox at the start of the next game.

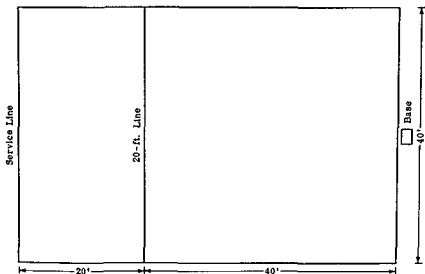
Sports Skills

Ball Skill Drills

Upon entrance to school, some children will have had experience in handling balls, while others will not; however, most children will be inept in their use. Thus, the teacher will wish to give some attention to teaching ball skills before and during their use in games. Drills should be provided for the children in the lower grades to master the following skills:²

1. Bounce ball to self.
2. Bounce ball to another person.

² Arthur G. Miller and Virginia Whitcomb, *Physical Education in the Elementary School Curriculum* (2nd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), p. 88.

FIG 9.2 *Bat Ball*

GAME DESCRIPTION. Divide the players into two teams of even size. One team is "in the field" and the other is "at bat." The batting order of each team is arranged by numbering the players consecutively. The batter stands with both feet behind the service line, holds the ball in one hand, and bats the ball with the other hand, using either a closed or an open hand. The batted ball must clear the 20-foot line without touching the ground and must be within the two side boundaries. If he fails on the first try, he is allowed another; if he fails on both trials, he is out.

A run is scored each time a batter makes a good serve and succeeds in running around the base and back to the service line. An out is made when: (1) a fly ball is caught by a fielder; (2) the batter fails to serve the ball as indicated above; (3) the ball is thrown to the base ahead of the runner; (4) the runner is tagged with the ball or is hit by the ball thrown by a fielder; (5) the runner steps over the side boundary lines to avoid being put out. Fielders may leave the playing area to retrieve a ball, but must return to the nearest point on a boundary line before throwing it. One point is scored for each run. Three outs retire a side, and the other team bats.

A foul occurs when a fielder: (1) takes more than one step while

the circles. (See Fig. 9.1.) One beanbag-toss layout is desirable for each six to eight pupils.

GAME DESCRIPTION. For each beanbag-toss layout, six to eight children line up, one behind the other, with the first child touching the tossing line. Each child then in turn tosses the four beanbags, one at a time, into the circle. Score two points for beanbags that drop into the inner circle and one point for those that drop into the outer circle. For those touching lines, score the toss for the circle in which the greater proportion of the beanbag rests; when in doubt, give it the highest score.

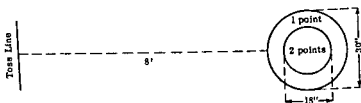


FIG. 9.1 *Beanbag Toss*

Keep Away

VALUE. Throwing and catching a ball.

EQUIPMENT. Large rubber ball or volleyball.

PLAY AREA. No markings.

GAME DESCRIPTION. Each group of 12 to 15 children forms a wide circle. One of the players will be *It*; he takes a place in the center of the circle. The players in the circle throw the ball from one to another around the circle or across the circle, as they wish. *It* tries to touch the ball. If he succeeds, the last player who threw the ball becomes *It*.

Bat Ball³

VALUE. Batting and catching a ball; dodging; group cooperation.

EQUIPMENT. Volleyball or 10-inch rubber ball; a base.

PLAY AREA. If available, a layout for each 16 to 20 players is desirable, as follows: Mark boundaries about 40 feet wide and 60 feet long; the line at one end constitutes the service line; a line is drawn parallel to and 20 feet from the service line; the base is placed just over the far boundary line in the center. (See Fig. 9.2.)

³Ruth Evans, et al., *Physical Education for Elementary Schools* (New York: McGraw-Hill Book Company, Inc., 1958), p. 109.

MIDDLE-LEVEL GAMES

For the middle-level boys and girls, mass games and sport skills presented at the low level will be continued; the games chosen, however, are more vigorous and intricate. The games selected for the development of skills involve greater efforts than is true for the former group; further, team cooperation is involved, although still at a rudimentary level. In addition, several vigorous relay races are described.

*Mass Games***Pom-Pom-Pull-Away**

VALUE. Vigorous running, dodging.

EQUIPMENT. None.

PLAY AREA. Mark off two parallel goal lines 40 to 75 feet apart, depending upon the available space. Boundary (side) lines may also be desirable in order to restrict the players.

GAME DESCRIPTION. One player is *It* and takes his place in the center of the play area. All other players are behind one of the goal lines. The game starts by *It* calling: "Pom-Pom-Pull-Away, if you don't come away, I'll pull you away." All players must then run to the other goal line, while *It* tries to tag as many as he can. Those players who are tagged help *It* try to tag the remaining players as the game continues; only the original *It*, however, calls "Pom-Pom-Pull-Away. . . ." The last child tagged wins and becomes *It* for the next game.

Hill Dill

VALUE. Vigorous running, dodging.

EQUIPMENT. None.

PLAY AREA. Mark off two parallel goal lines 40 to 75 feet apart, depending upon the available space. Boundary (side) lines may also be desirable in order to restrict the players.

GAME DESCRIPTION. One player is *It* and takes his place in the center of the play area. The other players are divided into two groups: one group is behind each of the goal lines. The game starts by *It* calling: "Hill Dill, come over the hill." The players of the two groups must then exchange goals, while *It* attempts to tag as many as he can. Those players who are tagged help *It* try to tag the remaining players as the game continues; only the original *It*, however, does the calling. The last child tagged wins and becomes *It* for the next game.

Stealing Sticks

VALUE. Vigorous running, dodging, rudimentary strategy.

EQUIPMENT. 12 sticks about 10 inches long (may use beanbags or other objects).

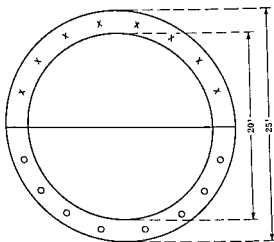
holding the ball; (2) bounces the ball and holds it himself; (3) holds the ball more than five seconds, (4) tags or hits the runner with the ball before he crosses the 20-foot line. Fielders may pass the ball to each other in the effort to get a runner out.

Circle Soccer

VALUE. Kicking a ball; group cooperation.

EQUIPMENT. Soccer ball, or substitute.

PLAY AREA. If available, a layout for each 16 to 20 players is desirable, as follows: Draw two concentric circles 20 and 25 feet in diameter; draw a line across the center dividing the circles into two parts. (See Fig. 9.3.)



Starting positions shown

FIG. 9.3 *Circle Soccer*

GAME DESCRIPTION. Divide the players into two teams of even size. The teams are assigned to opposite halves of the circle and line up in the space between the two circles. The game starts with the teacher rolling the ball into the circle along the center line. Offensively, the players on each team try to kick the ball past their opponents; defensively, they try to keep the ball from passing them by blocking it with their bodies, legs, and feet but not with their hands. One point is scored whenever the ball is kicked across the opponent's outer-circle line, but it must be kicked at a height less than the shoulder height of the shortest player in the game. After the ball is put in play, it is permissible for players to cross the center line.

at least 10 feet from it, but may chase an opponent if the opponent attempts to reach the goal.

Crows and Cranes

VALUE. Running, dodging, alertness.

EQUIPMENT. None.

PLAY AREA. Mark off two parallel goal lines 50 to 80 feet apart, depending upon the available space; mark off a center line midway between and parallel to the goal lines. Boundary (side) lines may also be desirable in order to restrict the players.

GAME DESCRIPTION. Divide the players into two groups, to be known as Crows and Cranes. The groups face each other, toeing the center line. The teacher (or one of the players may be designated to do this) calls either "Crows" or "Cranes." If the teacher calls "Crows" (and vice versa for "Cranes"), the Crows race back over their goal line; the Cranes chase them. All Crows tagged by the Cranes count points for the Cranes or join the Cranes' team. Both groups return to the center line, and the game continues. During the game, the leader should even up the number of times each team is called, while still making uncertain the group to be called each time. The group with the most points or the most players at the end of playing time wins.

Poison Club

VALUE. Strengthening.

EQUIPMENT. Three Indian clubs (or 2x4's 12 to 18 inches tall).

PLAY AREA. No markings.

GAME DESCRIPTION. Form groups of five to eight players; more or fewer could be used. Each group joins hands and forms a circle around three Indian clubs standing in a triangle (clubs placed about 1 to 1½ feet apart). By pulling and pushing, the players attempt to force any one of the group to knock over an Indian club. At the same time, each player tries to avoid hitting the clubs. Keep track of the number of times each player knocks over a club. At the end of five or six games, change circles, with the winners and losers gravitating to separate circles.

Relay Races

Relay races can be great fun. There are many of these, but the ones selected here are mostly vigorous in nature. Relays do not require a great deal of space, and so can be run on the playground, in the gymnasium, and, frequently, in the classroom. The formation for starting a relay race is with the children in file, one behind the other. The same number of players should be on each team, or some players will have to go more

PLAY AREA. Mark off a playing area 40 to 50 feet wide and 60 to 75 feet long, depending upon the available space. Draw a line through the center, dividing the area in half. At each end, mark off a goal box 6 feet by 4 feet. (See Fig. 9.4.)

GAME DESCRIPTION. Place six sticks in each goal box. Divide the players into two teams and assign each team a goal to defend. The object of the game is to steal as many of the opponent's sticks and to capture as many prisoners as possible. Thus, the game has offensive and defensive aspects, as follows: offensively, to reach the other team's goal; and defensively, to protect their own goal. Each team should have a Captain, who is responsible for assigning his players to offensive and defensive duties.

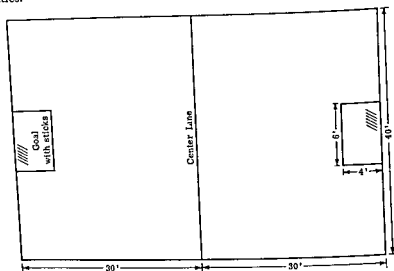


FIG 9.4 *Stealing Sticks*

Players attempting to reach their opponent's goal may be tagged at any time after they have both feet on or over the center line. They may go over the line and back as often as desired. If a player succeeds in reaching the opponent's goal, he takes a stick; the stick is then placed with the others in his goal. If he is tagged in this effort, he becomes a prisoner and must remain in his opponent's goal until rescued. He can be rescued by one of his teammates reaching the goal successfully. If prisoners are in the goal, they must be rescued before sticks are taken. Once the goal is reached successfully, the player and the prisoner, if he has rescued one, may return unmolested. Only one prisoner can be rescued at a time by the same player. Players guarding a goal must remain

where it fell, place it between the thighs again, and continue with the race.

Frog and Crab Relay

This is a shuttle relay. One-half of each team is at opposite ends of the relay course (20 to 30 feet). Those at one end are Frogs and those at the other end are Crabs. At the start, the Frogs do a frog-hop across the course, as follows: spring forward in a squat position, lighting on feet, balancing on the hands, and bringing the feet back under the body. As he crosses the opposite line, he touches off the first Crab on his team. The Crabs cross the space by crab-walk, as in the Crab-walk Relay already described. The relay continues until all players are back in their original positions (thus, all players have been both Frogs and Crabs).

Beanbag Relay

A beanbag is placed on the head of the first player. He runs to a line 20 to 30 feet away and back to the starting line. He then places the beanbag on the head of the second player, and the relay continues in this fashion. If a beanbag falls off the head of a player, he must stop and put it back on before continuing with the race. (This relay has value as a posture exercise.)

Back-to-back Relay

The players on each team pair off and stand back to back with elbows linked; one of each couple faces in the direction of the relay course. In this position, they travel to a line 20 to 30 feet away; without turning around, they return to the starting line. As they reach the starting line, they touch off the next pair.

Triple Relay

The second and third players step up on either side of the first player in line, their backs toward the starting line (the first player faces in the direction they are to go); the three players link arms. In this position, they travel to a line 20 to 30 feet away and, without turning around, return to the starting line. The first player then unhooks his arms, while the next player in line takes his place by hooking on.

Jump-the-stick Relay

The first player has a wand, which he carries in his hand as he races to a line 20 to 30 feet away and returns. When he reaches the starting line, the next player takes one end of the stick and the runner retains the other end; with one on either side of the line, they lower the wand until it is 6 to 8 inches from the ground, and move it rapidly to the end of the line. Each team member must jump over the wand as it reaches him. When the last player in line has jumped the wand, the

than once to make the relay situations even. As each player finishes his race, he goes to the end of his line. The first team having all players back in the original position wins.

Relay Run

An object is placed any distance from the starting line of each team, depending upon whether a short run or a long run is desired; of course, the marker distance must be the same for each team. At the start, the first player runs from the starting line to the marker, goes around it, and returns. As he crosses the starting line, he touches off the next player.

Lame-dog Relay

Players move forward by putting both hands and one foot on the floor; the other leg is lifted in the air. At the start, the first player of each team limps in this fashion as rapidly as possible to a line 20 to 30 feet away and returns. As he crosses the starting line, he touches off the next player.

Rabbit-hop Relay

The rabbit hop is performed by taking a deep knee bend, placing the hands well forward on the floor, then bring the feet up to the hands with a hop. Move in this manner to a line 20 to 30 feet away and return. Touch off the next player as the starting line is crossed.

Elephant-walk Relay

The elephant walk is performed by bending down from the waist, keeping the knees straight, and grasping the ankles. At the start, the first player of each team moves in this way as rapidly as possible to a line 20 to 30 feet away and returns. As he crosses the starting line, he touches off the next player.

Crab-walk Relay

From a squat position facing teammates, reach arms backward and put both hands on the floor without sitting down; the child's back is now toward the floor and his head is pointed in the direction he will go. From this position, crab-walk as rapidly as possible until the feet are over a line 10 to 15 feet away; then stand and race back to the starting line and touch off the next player.

Kangaroo-jump Relay

The first player places a volleyball or rubber ball between his thighs and holds it there with the muscles of his legs. By jumping from both feet, he can progress toward a line 20 to 30 feet away without releasing the ball; he then takes the ball from between his thighs, runs back to the starting line, and gives it to the player next in line. If the ball drops from between the thighs, the player must retrieve it, go back to the spot

and returns. As he approaches the starting line, he carefully passes the ball to the next player in line, and the relay continues in the same manner. At no time should a player touch the ball with his hands or arms.

Sports Skills

Bombardment

VALUE. Ball throwing, dodging.

EQUIPMENT. 12 Indian clubs (or 2x4's, 12 to 15 inches tall), 2 volleyballs.

PLAY AREA. Gymnasium or playroom is most desirable, as end walls contain thrown balls. Mark off two courts with a center line separating them. Place six Indian clubs spread out along each end line.

GAME DESCRIPTION. Divide the class into two teams and assign each team to one of the courts; the players may not cross the center line during the game. A ball is given to each team at the start of the game. The object of the game is for each team to knock down all of the opponent's Indian clubs, while defending their own from being knocked over. The balls can be thrown at will; at times, a good strategy is for two players on the same side to throw the two balls simultaneously at the same Indian club. Winning the game may be decided in two ways: (1) the side that first knocks down all of the opponent's Indian clubs; (2) the side that knocks down the most clubs in a set length of time.

Dodge Ball

VALUE. Ball throwing, dodging.

EQUIPMENT. Volleyball or soccer ball.

PLAY AREA. Mark out a circle about 20 feet in diameter.

GAME DESCRIPTION. Divide the class into two teams. The players on one team take positions around and outside the circle; the other team's players scatter about within the circle. The object of the game is for the outside players, using the ball, to hit the inside players on their legs or body. The circle players try to avoid being hit by the ball, move about, jump, stoop, and dodge, but they may not leave the circle. An outside player may enter the circle to get the ball if necessary, but must throw the ball to another team member; he may not carry the ball outside the circle and he may not throw at a circle player while within the circle.

Scoring the game may be done in two ways: by both methods, each team must take a turn in the center. The scoring ways are: (1) Count the number of hits made on the center players in a set length of time. By this method, a hit player does not leave the game, but raises a hand so as to be counted when hit. (2) Determine which team can eliminate the most center players in a set time. By this method, a hit player leaves the game when hit.

first player releases it and takes a position at the end of the line. The second player repeats the performance as the process is continued.

Over-and-under Relay

The first player stands on the starting line with a volleyball or rubber ball in his hands. At a signal, he passes the ball overhead to the second player; the second player passes the ball between his legs to the third player; play continues by alternating over and under until the last player receives the ball. The last player runs to the front of the line and repeats the overhead pass. The game continues until all players are in their original positions. If the ball is dropped or rolls out of the line, it must be recovered and put in play where it left the line.

Team Broad Jump

The first player in each team places both feet together just back of (and touching) the starting line; he performs a standing broad jump as far as he can. A short line is marked for the distance jumped. The second player "toes" this line and jumps, and so on until all players have jumped. The team jumping the farthest from the starting line wins. In marking a standing broad jump distance, mark the point nearest the toe line that the jumper touches, usually the back of the heels. If the heels are uneven in landing, the nearest to the jump line should be used; if the jumper falls back, then it will be his seat or his hands.

Obstacle Race

An obstacle course can be contrived from benches, old tires, hurdles, boxes, chairs, rolled mats, and the like; these should require the runners to jump, step, crawl, or even climb, and the like. The obstacle should be placed in a straight line for each relay team. The runners run through the course, turn at the usual 20- to 30-foot line, and return to the starting line, going through the obstacles again. The first runner on each team touches off the second runner, and so on until all have run.

Horse-and-rider Relay

Select one of the lightest members of the team as a Rider. The Rider stands behind the first player (Horse) in line. At the signal to start, the Rider mounts the back of the first Horse, with his feet around the Horse's waist and his hands and arms grasping his shoulders. The Horse runs to a line 20 to 30 feet away and returns. As he crosses the starting line, the Rider dismounts and quickly mounts the next Horse in line, and the process is continued.

Soccer-dribble Relay

The first player dribbles (with his feet) a soccer ball from the starting line down to and around a chair (or other object) 25 to 30 feet away

GAME DESCRIPTION. Teams are organized and arranged as for softball. The "batter" throws the ball into the field and runs the circuit of bases until he reaches home. The fielder who fields the ball throws it to first base; the first baseman touches the base with his foot and throws the ball to second base; then the ball is sent on to third base and finally to home plate, the thrower touching the base each time with his foot. If the runner reaches home plate before the ball, he scores; if he fails to do so, he is out. After three outs, the teams change sides.

Progression in teaching softball skills for this game can be achieved by the pitcher of the fielding team pitching to the batter, who tries to hit the ball with a bat. In this variation, the runner takes only one base at a time.

Line Soccer

VALUE. Soccer skills.

EQUIPMENT. Soccer ball.

PLAY AREA. Mark out a play area approximately 40 by 60 feet.

GAME DESCRIPTION. Divide the players into two teams. Each team stands along one of the long sides, the goal lines (see Fig. 9.5). At the start of the game, the ball is placed in the center of the play area. On signal, the player at the right-hand end of each team dashes into the center and tries to dribble (with the feet) and kick the ball over his opponent's goal; to score, the ball must not be above shoulder height. After a score is made, these players rejoin their teams, but at the left end of the line. The players who are now at the right end of the lines become the center players; the game continues until all players have had a turn in the center.

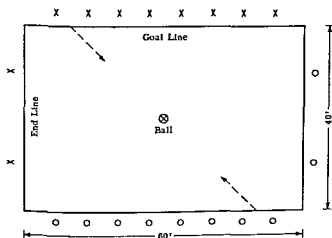


FIG. 9.5 Line Soccer

One Old Cat

VALUE. Baseball skills

EQUIPMENT. Bat, softball, and two bases for each game.

PLAY AREA. Junior softball diamond. (The distances are 30 feet from pitcher's box to home plate and 35 feet between bases.) The bases are placed at home plate and first base. Ideally, each game should be restricted to ten players or fewer.

GAME DESCRIPTION. In this form of softball, each player plays for himself. The players number off consecutively for purposes of starting positions and rotations. At the start, No. 1 is the batter; No. 2, the catcher; No. 3, the pitcher; Nos. 4, 5, 6, and so on, the fielders. The object of the game is for the batter to hit a pitched ball into fair territory, and then run to first base and back to score a run. There is no put-out at first base, so all fielders throw the ball to home plate. The batter may strike out by missing three pitched balls; and he may be put out if the batted ball is caught on the fly by a fielder or if the runner is put out by the catcher (or any other player) touching home plate ahead of the runner with the ball in his possession.

If the runner scores, he continues to bat until put out. When he is put out, he goes into the field as the last player in the rotation. All other players move up one position. Thus, the catcher becomes the batter; the pitcher becomes the catcher; the infielder near first base (No. 4) becomes the pitcher, and so on. Players keep individual scores; after each player has batted, the one with the most runs is the winner.

Four Rounds

VALUE. Ball throwing and catching.

EQUIPMENT. Softball, volleyball, or basketball for each team.

PLAY AREA. No markings.

GAME DESCRIPTION. Groups of four are formed into a square; the players are 10 to 20 feet apart, as desired. Players in the same positions in the square are designated as Captains of their respective groups. Each Captain has a ball. At the start of the game, he passes the ball to the next player in a clockwise direction; this player passes to the next, and so on around the square back to the Captain. The Captain calls "One" when he receives it; he continues passing it around the square, counting each time he receives it. The team which first completes four rounds, and whose Captain thus first calls "Four," wins the game. If a player misses a catch, he must retrieve it and return to his place before throwing. The game may be varied by specifying different kinds of passes to use.

Base Running

VALUE. Base running, ball throwing and catching.

EQUIPMENT. Softball, 4 bases.

PLAY AREA. Softball diamond.

course, they can be used by the teacher. At the high level, the games are classified as (1) mass sports and (2) team sports.

Sports Fundamentals

This section will be devoted to a brief explanation of a limited number of the basic skills of sports included in the elementary school physical education program. If children are taught correct skill techniques at an early age, at the beginning of their sports experiences, they will be well started on their enjoyable use for many years to come.

Basketball Skills

Two-hand Chest Pass

The two-hand chest pass is the most useful and, probably, the most common pass in basketball. Next to the underhand pass, it is the easiest to do; the ball can be well controlled, so that it is an accurate pass.

The technique in executing the two-hand chest pass is as follows: Place both hands alongside the ball, with the ball resting on the fingers and thumbs (not the palm of the hand), the fingers should be spread, pointing forward; the thumb should point inward, keep the elbows close to the body; hold the ball in front of the chest but away from the body. In making the pass, extend the arms quickly and release the ball with a strong wrist snap and push of thumbs and fingers, the arms should follow through; simultaneously, step in the direction the pass is to go.

Two-hand Underhand Pass

This pass is used when the distance is short and accuracy is desired; it is an easy pass to catch. The pass is not satisfactory when the play is close and crowded.

In game situations, this pass is usually made from the side of the body, although in teaching this skill to beginners, it may be well to start from in front of the body. Assuming that the ball is to be passed from the right side, the technique is as follows: Stand with the left foot forward; hold the ball with both hands alongside and the ball resting on the fingers and thumbs; bring the ball back to the right hip. In making the pass, extend the arms quickly in an underhand (tossing) motion; the arms should follow through completely; the aim should be at the abdomen of the receiver. This pass may also be used effectively from a semi-crouched position.

Two-hand Chest Shot

The two-hand chest shot is commonly used in basketball for set shots from positions on the court at some distance from the basket. It should be the basic shot for the beginner in basketball.

All players along the goal lines defend against scoring by the opponent's center player. These players may block the ball with their feet, legs, and body; they can only catch or touch the ball with their hands if it is in the air above the waist. When they catch a ball, they must immediately drop it or place it on the ground and play it with their feet; they may not throw it. The center players may not touch the ball with their arms or hands at any time. One point is scored each time the ball passes over the goal line of the opposing team. Only center players may score.

When the game is played outdoors, two players from each team should be placed on the end lines, as shown in the diagram. When the ball goes out of bounds, these players recover it, bring it back to the end line, and try to kick it back to their respective center players.

Soccer Dodge Ball

VALUE. Soccer skills of kicking and blocking.

EQUIPMENT. Soccer ball or large rubber ball.

PLAY AREA. Mark out a circle 20 to 30 feet in diameter, as desired.

GAME DESCRIPTION. Divide the class into two equal teams. The players on one team take positions around and outside the circle; the other team players scatter about within the circle. The object of the game is for the outside players to hit the inside players below the waist by kicking the ball. The inside players try to avoid being hit by the ball, move about, jump, stoop, and dodge, but they may not leave the circle; if they touch the ball with their hands, it constitutes a hit. An outside player may enter the circle to get the ball if necessary but must return to a position outside the circle before playing the ball again; he may also kick it to a teammate, who can then play it.

Scoring the game may be done in two ways; by both methods, each team must take a turn in the center. The scoring ways are: (1) Count the number of hits made on the center players in a set length of time. By this method, a hit player does not leave the game, but raises a hand so as to be counted when hit. (2) Determine which team can eliminate the most center players in a set time. By this method, a hit player leaves the game when hit.

HIGH-LEVEL GAMES

Unlike the other levels in this book, the high-level games all require the use of some sort of ball. Thus, they are all related in some way to sports skills as previously presented; in a number of instances, they consist of playing regularly established sports or lead-up games to those sports. Quite possibly, too, some of the mass games and relays in the middle-level listing may still appeal to the high-level children, so, of

its use adds to their ability to control the ball. Only one dribble series is allowed during a single possession of the ball; the player may dribble again of course, each time he receives the ball.

The dribble consists of bouncing the ball one or more times in order to move it about the court. Dribbling must be done with one hand only, although hands may be interchanged; when the ball is touched by both hands simultaneously, the dribble must stop. In dribbling, the player taps the ball with his fingers so that it rebounds about waist high; he uses a slight wrist action and keeps the ball close enough to him so that he can control it. As skill in dribbling is achieved, the player should learn to keep his head up and his eyes looking ahead of him, not on the ball.

Drill Formations

Drill formations that may be utilized in teaching basketball skills are described below. For each formation, the number of players should be kept small enough to permit frequent practice for all participants.

PASS FORMATIONS. A. *Zigzag*: Two lines are formed facing each other. The ball is passed, utilizing a specified pass, between players of opposite lines; repeat as many times as desired. Increase the distance between the lines as ball-handling skill improves. B. *Circle*: A circle is formed. Pass the ball from player to player around the circle, or pass the ball across the circle to a different player each time. Pivot properly when changing direction. C. *Shuttle*: Two files are formed with distance between and facing each other. The first player in one file passes to the first player in the opposite file, then goes to the end of his line; this continues until all players have passed the ball. A variation of this formation is for the passing player to follow his pass and run to the end of the opposite line.

DRIBBLE FORMATION. A. *Straight*: A file is formed. Each player in turn dribbles to a line or around an object and back to the next player in the formation. B. *Obstacle*: A file is formed. Objects are placed on the floor around which the ball is dribbled. Dribbling may be done slowly or fast, with the right hand or left hand or alternating hands.

GOAL SHOOTING. A. *Long shots*: Squad lines up in front of basket. Players take turns shooting at the basket and retrieving the ball. B. *Lay-up shots*: Form a file on the right, left, or center, facing the basket. Player 1 passes the ball to 2, who is cutting for a lay-up shot; 1 retrieves the ball and takes a place at the end of the line, player 2 passes to 3, retrieves, and the formation continues. C. *Dribble and lay-up shots*: The same formation as for lay-up shots is used, except that the player receiving the ball dribbles into the basket before shooting.

The technique for this shot is similar to that for the two-hand chest pass described above, in the shot, the ball should be arched high toward the basket. The aim should be to clear the near rim of the basket, and not to hit the backboard for a bank shot. In stance for the shot, stand with knees slightly bent, one foot slightly ahead of the other, and eyes focused on the rim of the basket; as the shot is executed, the rear foot is extended strongly enough to lift both feet off the floor as a part of the follow-through.

Lay-up Shot

As the children become more adept in handling a basketball, the lay-up shot can be introduced. This shot is extremely important in basketball, as many points are scored with it from positions close to the basket.

The one-hand lay-up shot is most common and is executed in the following manner: Hold the ball in both hands, while jumping off the floor near the basket. When ready to lay it in, transfer it completely to the shooting hand, palm up and toward the basket; raise the shooting hand as high as possible toward the basket; release the ball off the finger tips, laying it gently against the backboard in a bank shot into the basket. The lay-up shot can also be done directly over the rim of the basket, without use of the backboard.

Pivot

The rules of basketball, which prohibit running with the ball, make the pivot an essential offensive maneuver to avoid a defensive player. Once the player stops with the ball in his possession, he can move only one foot while holding the ball. His pivot foot must stay in contact with the floor until he passes the ball, shoots for the basket, or starts a dribble; the free foot may move repeatedly as long as the pivot foot stays firmly in place.

When receiving the ball, if the player lands on both feet simultaneously in stride position, the back foot is the pivot foot; if he lands on both feet simultaneously with both feet even, either foot may be the pivot foot; if one foot lands before the other, it becomes the pivot foot. The pivot consists of keeping one foot firmly in place on the floor; the other foot can be moved in any direction and can touch the floor as many times as desired in doing so. Pivots are usually performed with the body in a crouch position.

Dribble

The dribble is the only way a player can legally move the ball about the court while still maintaining possession of it. In the girls' game, restrictions are placed on the use of the dribble; however, teaching them

skilled soccer dribbler can zigzag and maneuver the ball as effectively as a basketball player dribbles a basketball. Either one or both feet alternately may be used in advancing the ball or in eluding an opponent. In dribbling, the ball is not kicked with the toe, but with either the inside or the outside of the foot.

Passing

To pass a soccer ball, one player kicks it to another. If the pass is to a player some distance away, the ball is kicked with the toe. If the player is close enough, the pass is made with either the inside or the outside of the foot.

Trapping

Trapping is stopping the soccer ball, whether it is rolling or bounding or is a ball in flight. There are various ways to accomplish a trap, depending upon circumstances. Three of these ways are as follows: (1) The ball may be trapped by stepping lightly on it with one foot. This trap is useful in stopping a rolling ball. (2) The ball may be trapped by the lower legs and knees. For this trap, the player brings his feet together, and, as the ball hits at his feet, he bends his knees and closes down on it. This trap is effective to stop a bounding ball or a fly ball. (2) The ball may be trapped by jackknifing the body over it, bringing the ball gently down to the player's feet. This trap is necessary to trap a ball in the air.

Drill Formations

Drill formations for soccer may be adapted from those presented for basketball.

Softball Skills

Overhand Throw

For a right-hander to throw a ball overhand, the ball is grasped in the hand, with the first two fingers on top, the thumb on the left side, and the third and fourth fingers on the right side. The stance is with the left foot forward, the body turned in the direction of the throw, and weight on the right foot. In executing the throw, the hand holding the ball is swung back, with elbow bent, to a position well behind the shoulder and at about shoulder height; without pausing, the throwing arm is brought forward forcefully and the elbow is extended; the ball is released with a downward snap of the wrist if speed is desired; the weight of the body is transferred simultaneously to the left (forward) foot and is brought forward into the throw.

Football Skills

Passing

The passer grips the football with fingers and thumb slightly behind the middle of the ball, with fingers on and across the lacing. The throw is executed much like a baseball throw, as follows: The player stands with his left foot forward (for right-handed passers), carries the ball back to a position behind his ear, and shifts his weight to his right foot; he throws the ball forcibly forward from this position; as the ball is released, he gives it a snap of the wrist to provide a spiral to the ball in flight; simultaneously, he shifts his body weight to his left foot.

Pass Receiving

The football should be caught with the hands, although with beginning players it can be trapped against the body. As the ball touches the hands, a slight giving motion should occur rather than resisting the ball. If running away from the pass, the ball should be caught over the right or left side of the shoulders, if possible.

Punting

In punting a football, the ball is held by both hands. For right-footed kickers, the right hand is toward the rear of the ball along the right side; the left hand is toward the front of the ball on the left side; the left arm is straight; the ball is held about waist high in front of the right leg with the forward end tilted upward slightly; the left foot is forward. In executing the punt, the punter takes a short step with his right foot, a long step with his left foot, and a vigorous forward and upward swing with the right (kicking) foot, toe extended; the ball is dropped as the kicking foot starts its upward drive; the point of contact of the ball on the foot is along the instep; a good follow-through of the kicking leg adds distance to the punt.

Soccer Skills

In soccer, the only player who may touch the ball with his hands or arms is the goalkeeper, and he can do so only when within the goal area. Thus, soccer is a kicking game, although the ball can be played with other parts of the body, including the head.

Dribbling

Dribbling in soccer consists in playing the ball with a series of kicks. These kicks are short kicks which can be controlled by the kicker. A

courts; however, they may maneuver in their courts in any way they wish. Players may carry the ball to a boundary line to throw at an opponent if desired.

The game is played in three time periods of three to five minutes each. At the end of each time period, the teams progress from one court to another, so that each team has a turn in the center court.

Corner Ball

VALUE. Ball throwing, catching, and intercepting.

EQUIPMENT. Basketball, volleyball, or soccer ball.

PLAY AREA. Mark out a court about 25 to 30 by 30 to 40 feet, with a dividing line across the center. Mark out a 6-foot square in each corner.

GAME DESCRIPTION. Divide the class into two equal teams; assign one team to each half of the play area. Each team assigns a player to occupy each corner square in their opponent's territory. The game is started by tossing the ball up between two opposing players in the center of the play area, as in basketball, each of these players attempts to tap the ball into his court so that it may be obtained by a member of his team.

The object of the game is to throw the ball over the heads of the opposing team in such a manner that it can be caught by one of the team's corner players. A point is scored each time a corner player receives the ball from a member of his team. A corner player may not step out of his corner square when receiving the ball. With the exception of center toss-ups, the field players may not step on or over the center line. A field player obtaining the ball may take one step with it; he must play the ball within three seconds by either passing it to a teammate or making a throw to one of his corner players. Field players may not step into the corner squares. Whenever a corner player receives the ball, he returns it to his own team.

END BALL. A variation of Corner Ball is End Ball. In End Ball, instead of corner squares, a strip 4 feet wide is marked off across the entire end of each court. Three members of opposing teams are assigned to these end areas. The game then proceeds as in Corner Ball.

Basketball Keep Away

VALUE. Basketball handling.

EQUIPMENT. Basketball.

PLAY AREA. Agreed-upon boundaries are an advantage in order to restrict the play.

GAME DESCRIPTION. Divide the class into two equal teams; both teams scatter about the play area. To start the play, a basketball (or other ball) is thrown high into the group. The object of the game is for the team catching the tossed ball to pass the ball among its own players while the other team tries to intercept the ball. When the ball is inter-

Catching

For a fly ball above the waist, the fingers should be pointed upward with the thumbs together. For a fly ball below the waist, the fingers should be pointed downward with the little fingers together. As the ball hits the hands, some give with the ball is advantageous.

Batting

The right-handed batter should grasp the bat with his left hand about two to three inches from the end and with the right hand just above it; the fingers and thumbs of both hands should be around the shaft of the bat. The stance is with the body facing the home plate; the feet are about 12 to 16 inches from the plate and about 10 inches apart, with the forward foot opposite the front edge of the home plate; the rear foot points toward the home plate, while the front foot may be turned slightly toward the pitcher; the head is turned toward the pitcher, with eyes focused on the ball; the bat is brought back about as far as the ear (do not rest it on the shoulder); the elbows should be kept away from the body. The swing should be on a horizontal plane, and should be smooth and easy; the forward foot is moved ahead in the direction of the pitcher. The batter should keep his eye on the ball until it reaches the home plate; this is essential for good hitting. As the bat meets the ball, the elbows and wrists should be extended, the ball being met in front of the body; the bat should follow through after meeting the ball.

Mass Sports

Progressive Dodge Ball

VALUE. Ball throwing, dodging.

EQUIPMENT. Basketball or volleyball.

PLAY AREA. Gymnasium or playroom most desirable, as end walls contain thrown balls. Mark out an area of around 60 by 30 feet divided into three courts (20 by 30 feet each).

GAME DESCRIPTION. Divide the class into three equal teams; assign a team to each of the three courts. To start the game, a player on the center team is given the ball; by throwing it, he attempts to hit a player in either end court. As soon as the ball strikes the ground or hits a player, a player on the end team picks it up and tries to hit a center player with it. Thus, the center players try to hit players in the end courts, and the end players try to hit players in the center court. All players, of course, try to avoid being hit by the ball. A point is scored against the team whose player is hit by the ball before it bounces; hits, to count, must be on the body or legs. Players must remain in their respective

yards from each goal line, equidistant between the side lines (this spot should be closer to center of field for beginning players).

GAME DESCRIPTION. Divide the class into two equal groups, although it is best to have only eight to ten players on a team. These teams are each assigned a goal to defend; the players take positions in front of their goal in any way they wish. One team is awarded the football to start the game (this may be decided by flipping a coin). A player of this team stands on his starting spot and throws the football as far down the field as he can. The opposing team tries to catch the ball; if the pass is missed, it is recovered as quickly as possible. The player catching or recovering the ball then passes it back down the field as far as he can from the point of possession. The object of the game is to pass the ball over the opponent's goal line in the air. If the ball is caught behind the goal line or if the ball crosses the goal line after touching the ground, it is brought to the goal line for the throw. For the next game, the losing team first puts the ball in play from the starting spot.

FOOTBALL PUNT BACK. This game is played the same as Football Pass Back, except that the ball is punted each time instead of being passed.

Team Sports

Newcomb

VALUE. Ball throwing and catching.

EQUIPMENT. Volleyball, net or rope.

PLAY AREA. Mark out a court 30 by 60 feet. Stretch a net, or a rope, 7 feet high across the center of the area, thus making two halves 30 feet by 30 feet.

GAME DESCRIPTION. Divide the class into two equal teams, and assign these teams to opposite halves of the court. The game is started by a player on one team throwing a volleyball over the net to the opposing team. The opposing team players try to catch the ball; if caught, the player making the catch immediately throws the ball back over the net from the spot where he caught it (he is allowed one step only). The ball is thrown back and forth in this manner until a player misses. One point is scored for the opposite team each time the following occurs: (1) Missing the catch. (2) Hitting the ball into or under the net. (3) Having two players on the same side touch the ball. (4) Throwing the ball out of bounds. The team which wins the point puts the ball in play each time. The team first scoring 21 points wins.

A variation of this game is to assign a definite position for each player; two or three rows of players may be formed. Rotate the players as in volleyball from time to time so that opportunities for activity are equalized.

cepted, the other team tries to keep it away from its opponents. Walking with the ball is not permitted, although it may be bounced once before throwing. All players but the one with the ball may move about the floor at will. It is not necessary to score this game. However, the number of passes completed by a team in a period of five minutes, for example, may be counted.

Soccer Keep Away

VALUE. Soccer ball handling.

EQUIPMENT. Soccer ball.

PLAY AREA. Agreed-upon boundaries are an advantage in order to restrict the play.

GAME DESCRIPTION. Divide the class into two equal teams; both teams scatter about the play area. To start the play, a soccer ball is rolled into the center of the play area. The object of the game is for the team gaining the ball to keep it away from the other team. The ball must be played with the feet, although it may be stopped by other parts of the body, except the hands and arms. The ball may be dribbled with the feet and may be passed from one player on a team to another. When a player of one team has the ball, only one player of the opposing team may try to get the ball away from him. Attacking players may try to gain possession of the ball by use of the feet only; they may not push, shove, hold, or otherwise rough opponents. If the ball goes out of bounds, a player of the opposite team will put it in play at the point where it went out. There is no scoring in this game, although the number of successful passes by each team may be counted if desired.

Basketball 21

VALUE. Basketball goal shooting.

EQUIPMENT. Basketball and basket for each group.

PLAY AREA. Indoor or outdoor basketball courts.

GAME DESCRIPTION. If a sufficient number of baskets are available, form groups of four to six players for each one. In turn, each player shoots from behind the foul line or its equivalent (although longer distances may be used if desired). He shoots one long shot and immediately follows it and shoots again from the point of recovery. If the first shot is made, it counts two points; if the second shot is made, it counts one point. The player who first scores 21 points wins.

Football Pass Back

VALUE. Football passing or punting.

EQUIPMENT. Football.

PLAY AREA. Play field 60 yards long by 40 yards wide. Mark off boundary lines; the end lines will be goal lines. Mark a starting spot 15

ball (kicks it from his hands) into the field and attempts to make as many bases as he can without being put out. The punt must clear the home base line to be legal. A punter may remain on any base and may advance on the next kick; only one runner may occupy the same base at a time, however.

A kicker is out if: (1) his punt is not beyond the home base line; (2) a fielder catches the punted ball before it touches the ground; (3) a fielder touches him with the ball as he is going between bases; (4) a fielder with the ball in his possession touches a base when the base runner is forced to run (because the runner following him must occupy his former base). No runner may advance on a caught fly ball. Each time a runner completes the circuit of all bases without being put out, he scores a run for his team. When the punting team has three outs, the teams change places.

Feather Ball

VALUE. Alertness, quickness of movement, team play.

EQUIPMENT. Feather ball or shuttlecock.

PLAY AREA. Mark out a court about 20 feet by 30 feet with a line across the center (making two halves, 20 feet by 15 feet each).

GAME DESCRIPTION. Arrange two teams of four to eight players each; these teams occupy opposite sides of the center line. One team is given the feather ball; one player stands behind his end line and serves the ball to the opposing team by batting it with his open hand. The serve must go over the center line on the fly to be legal. In accomplishing the serve, an assist may be given by one (only) of the server's teammates.

The opponents try to return the feather ball over the center line by batting it with the open hand. Any number of players may hit the ball in order to get it into the opponent's court, but the same player may not hit it twice in succession. Only the serving team scores; when the serving team fails to serve successfully or is unable to return the ball when played to them, they lose the service to the other team. One point is scored for the serving team when their opponents do not return the ball properly after a service or during back-and-forth play. Balls landing out of bounds constitute unsuccessful plays. The team first scoring 21 points is the winner.

Touch Football

VALUE. Football skills, team play.

EQUIPMENT. Football.

PLAY AREA. Touch football field, 30 yards by 60 yards, marked out in four 15-yard zones, as shown in Fig. 9.6.

Kick Ball

VALUE. Kicking and catching a ball, group cooperation.

EQUIPMENT. Volleyball.

PLAY AREA. If available, a layout for each 16 to 20 players is desirable, as follows: Mark the boundaries for a play area about 50 feet wide and 90 feet long (although this size can be varied). The line at one end constitutes the kick line; another line is drawn parallel to and 15 feet from this line. Mark out three areas for bases, each two feet square, located as follows: two bases, one on each sideline 40 feet from the kick line, and one base equidistant between the sidelines 60 feet from the kick line. (A softball diamond could be adapted for this game.)

GAME DESCRIPTION. Divide the players into two equal teams. One team is "in the field" and other is "at kick." The kicking order of each team is arranged by numbering the players consecutively. The ball is placed at the center of the kick line, and the first player kicks it into the field. The kicked ball must clear the 15-foot line without touching the ground and must land within the boundaries of the play area. If the player fails on the first try, he is allowed another; if he fails on both trials, he is out.

When a player kicks a fair ball, he runs to first base (the square on the right sideline) and may continue for as many other bases as he desires. An out is made when: (1) a fly ball is caught by a fielder; (2) the kicker fails to kick the ball as indicated above; (3) the ball is thrown to the base ahead of the runner; (4) the runner is tagged with the ball or is hit by the ball thrown by a fielder before he reaches a base.

As many runners as wish may occupy the same base at the same time. Once a runner leaves a base, he must proceed to the next one; if a kicked ball is caught under these circumstances, the runner is also out. As many runners can be put out at a time as can be accomplished. If all runners are on bases and there is no kicker, the next player in the kicking order must go in to kick; an automatic out is called. A side is retired after three outs, and the teams change places.

Base Football

VALUE. Football passing and catching; base running; team play.

EQUIPMENT. Football, four bases.

PLAY AREA. Softball diamond with bases 35 feet apart. Draw a line 10 feet in front of home plate, extending it to touch the first and third base lines; this is the home base line.

GAME DESCRIPTION. Teams are organized and arranged as for softball; the kicking order of each team is established by numbering the players consecutively. The members of one team take the field, while the members of the other team are the punters. The first punter punts the foot-

be behind the ball when it is kicked. The members of the receiving team must line behind the 30-yard line at the center of the field. The kick-off is a free ball and may be picked up by either team provided it has gone at least 15 yards. A ball kicked over the opponent's goal line is a touch-back (no score) and is put in play by the receiving team on their 15-yard line.

7. *Yardage and downs*: When a ball is first down in a zone, the team in possession has four downs to move it from that point into the next zone.

8. *Forward pass*: A forward pass may be made from any point behind the line of scrimmage. Any player may make the pass, and all players are eligible receivers.

9. *Touching*: A touch occurs when an opponent touches the ball carrier with both of his hands simultaneously. The ball shall be declared dead where the touch occurred. No part of the toucher's body except his feet shall be in contact with the ground throughout the touch. Penalty: 10 yards from the point where the penalty occurred.

10. *Blocking*: Blocking shall be permitted on the line of scrimmage in the usual manner, but without unnecessary roughness. In the open, no part of the blocker's body except his feet shall be in contact with the ground throughout the block. Penalty: 10 yards from the point where the penalty occurred.

11. *Penalties*: All 15-yard penalties in football will be reduced to 10 yards on these smaller fields.

12. *Scoring*: As goal posts are not used, field goals will not be possible. Otherwise, the scoring is the same as for football.

Soccer

Soccer is a well-established game with official rules. The extensiveness of these rules is so great as to preclude inclusion in this book. An official soccer rule book for boys can be obtained from: National Federation of State High School Athletic Associations, 7 South Dearborn Street, Chicago 3, Illinois. For girls, the soccer guide is available from: National Section on Girls' and Women's Sports, 1201 Sixteenth Street, N.W., Washington 6, D.C. Modifications in playing area, in players' equipment, and, possibly, in certain of the rules may be made locally for physical education classes if found desirable.

The elementary school teacher presenting upper-level physical education activities who is unfamiliar with soccer may get help from the physical education specialists assigned to junior and senior high school programs.

Basketball

Basketball, of course, may be played either in a gymnasium or on a play area outdoors, especially one that has been hard-topped. This game

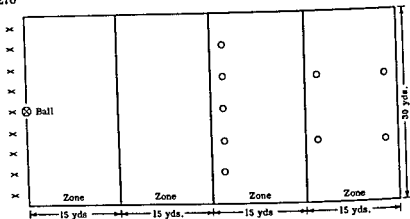


FIG. 9.6 Touch Football Field

GAME DESCRIPTION. Touch Football is a fascinating game, which has been widely used for boys. Rules for the game have not been universally adopted; the rules given here have been successful and are suggested. In this game description, the variations of the rules for Touch Football from the rules for regulation Football are given.

1. *Number of players.* Nine players shall constitute a team. On offense, five players must be on the line of scrimmage and four players must be at least one yard behind the line at the moment the ball is snapped from center.

2. *Equipment of players:* Players are prohibited from wearing the following: cleated shoes of any sort, padded suits, or special protective devices such as shoulder pads, helmets, and so forth.

3. *Substitutions:* Unlimited substitutions are permitted.

4. *Length of game:* Four periods of ten minutes each shall constitute a game (although period and game length can be varied as desired). Two minutes' time-out is allowed between the first and second and the third and fourth periods; five minutes' time-out is allowed at half-time (between the second and third periods).

5. *Tie game:* A tie game may remain as a tie; or the tie can be broken by use of the following process: Place the ball down in the center of the field. Each team is given five plays, alternating in turn. Thus, team A takes one play; then team B makes one play from where the ball was downed by team A; and so on.

The team that has advanced the ball into its opponent's territory (unless one team has a touchdown advantage) is awarded one point. No punting or kicking the ball is allowed during this period.

6. *Kick-off:* The kick-off is made from the team's own goal line; the ball may be place-kicked or punted. The members of the kicking team must

middle level, the types were mass games, relays, and sports skills. At the high level, the activities were mass games and team sports. A section describing a limited number of sports fundamentals associated with basketball, touch football, soccer, and softball was included.

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- Armbruster, David A. and Leslie W. Irwin, *Basic Skills in Sports for Men and Women*, 2nd ed. St. Louis, Mo.: The C. V. Mosby Company, 1938.
- Dauer, Victor P., *Fitness for Elementary School Children Through Physical Education*. Minneapolis, Minn.: Burgess Publishing Company, 1962.
- Evans, Ruth, Thelma I. Bacon, Mary E. Bacon, and Joie L. Stapleton, *Physical Education for Elementary Schools*. New York: McGraw-Hill Book Company, Inc., 1958.
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is well known to most teachers, although the fine points of the rules may need some study. Some adaptations may be desirable for young children, such as the use of a smaller ball and a lower basket.

The rules for boys' basketball may be obtained from: National Federation of State High School Athletic Associations, 7 South Dearborn Street, Chicago 3, Illinois. For girls, the source for rules is: National Section on Girls' and Women's sports, 1201 Sixteenth Street, N.W., Washington 6, D.C.

Volleyball

Volleyball may be played both in a gymnasium and on an outdoor play area. This game is well established, with official rules. The rules are available through: U.S. Volleyball Association, USVBA Printer, P. O. Box 109, Berne, Indiana. Girls' volleyball rules may be obtained from: National Section on Girls' and Women's Sports, 1201 Sixteenth Street, N.W., Washington 6, D.C. For younger children, if desired, the rules may be modified to allow for a lower net, more assists in returning the ball over the net, changes in serving, and the like.

If the elementary school teacher who is engaged in conducting upper-level physical education activities is not familiar with volleyball, she can readily secure assistance from the physical education specialists in the junior and senior high schools.

Softball

Softball is a generally well-known game. However, if the teacher or the school wishes a copy of the official rules, they may be obtained from: Amateur Softball Association, 11 Hill Street, Newark 2, N.J. For girls, the rule-book source is: National Section on Girls' and Women's Sports, 1201 Sixteenth Street, N.W., Washington 6, D.C.

Other Sports

For the teacher who wishes to know the source of the official rules of all sports, such a list may be obtained from the Athletic Institute, Room 805 Merchandise Mart, Chicago 54, Illinois.

SUMMARY

This chapter has been devoted entirely to the presentation of games and sports for elementary school boys and girls. Three levels of difficulty were utilized, as in Chapter 8, instead of the usual grade-in-school classification. These levels, with the grades normally associated with each, are: low level, grades one and two; middle level, grades three and four; and high level, grades five and six. The types of low-level activities consisted of story plays, tag games, mass games, and sports skills. For the

middle level, the types were mass games, relays, and sports skills. At the high level, the activities were mass games and team sports. A section describing a limited number of sports fundamentals associated with basketball, touch football, soccer, and softball was included.

SELECTED REFERENCES

- Armbruster, David A. and Leslie W. Irwin, *Basic Skills in Sports for Men and Women*, 2nd ed. St. Louis, Mo.: The C. V. Mosby Company, 1958.
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Chapter

10

Rhythms, Singing Dances, and Folk Dances

TRADITIONALLY, AN ESSENTIAL PHASE of the elementary school physical education program involves the teaching of and participation in rhythmic and dance activities. These activities are of several types, including rhythms, singing games, creative movement expression, modern dancing, gymnastic dancing, folk dancing, and social dancing. In this chapter, major emphasis will be placed on those rhythms, singing dances (also known as singing games), and folk dances which may be utilized effectively by the classroom teacher.

Rhythms and dances may be utilized as a fine educational experience when appropriately selected and properly presented. Certain of their values follow.

1. In Chapter 1, culture was proposed as an objective of physical education. The age-old liberal culture forms are music, art, literature, and the dance. Thus, some forms of rhythms and dancing may be related directly to the realization of this objective.

2. Rhythmic and dance activities provide a means of self-expression. Children have a natural desire for rhythmic movement and for using the body in expressive movement. Such movement should be a part of each child's school experience.

3. Through rhythms and dancing, children can acquire a better appreciation and understanding of their own bodies. Depending on the dance form, they may practice either free movement or controlled movement. The grace required for a fine performance of either movement is well recognized.

4. Proper rhythmic and dance performances can easily contribute to

the improvement of the body mechanics and posture of children. The need for a well-poised body in a graceful dance achievement is axiomatic.

5. Folk dancing offers excellent opportunities for integration with other school subjects. Thus, in addition to the dance performance itself, the place of the dance in its cultural setting, the native costumes worn for the dance, and the customs and heritage of the country in which the dance originated may be studied.

6. Physical fitness may be improved if the rhythmic and dance forms presented require vigorous movements involving gross body activity.

In Chapter 8, three levels of progression were adopted in presenting conditioning, exercises, stunts, and conditioning activities. These same levels will be utilized for rhythms, singing dances, and folk dances. The levels and the grades normally associated with them are: *low level*, grades one and two; *middle level*, grades three and four; and *high level*, grades five and six. As before, also, these levels should not be considered as mutually exclusive, but should be adapted constantly to the interests and abilities of the children. In presenting the rhythms and dances in this chapter, no attempt was made to arrange them according to difficulty within the various levels, as has been done with physical education activities in some of the other chapters. An alphabetical listing only has been used.

METHODOLOGY

In this section, suggestions for teaching rhythms, singing dances, and folk dances will be made. Quite obviously, this is a type of physical education activity which benefits greatly from music accompaniment. Fortunately, records have been made for a great many rhythms and dances. To simplify the acquisition of these records by the classroom teacher, it may be noted that records for the dances included in this chapter may be obtained from either or both of the following sources:

1. Folkraft Records, 1159 Broad Street, Newark 2, New Jersey.
2. RCA, Victor Record Division, 155 East 24th St., New York 10, N.Y.

In the presentation of the singing and folk dances in this chapter, the record source and number are given. The Victor records may be obtained for different speeds. Those listed for the various dances are for 45 and 78 rpms; those with an E or 45 prefix are 78 rpm, and those with a WE or 41 prefix are 45 rpm. The Folkraft records are 78 rpm.

Rhythms

Fundamental rhythms involve the smoothly coordinated repetition of basic forms of body movement. In this book, the rhythmic activities are

related largely to locomotion. Thus, the steady flow of movement involved in walking, running, skipping, leaping, galloping, and sliding are stressed. Suggestions for conducting these activities follow.

1. Choose music that fits the rhythmical pattern to be performed. The music should have clear accent, but should not overemphasize the beat.

2. Permit the children to listen to the music, to familiarize them with it. Then have them keep time to it by clapping their hands or moving their feet.

3. Select a rhythmic activity (or permit the children to do so), and demonstrate it to the children. Then allow each child to practice the movement until he is able to perform it reasonably well. Finally, combine the music and the performance of the rhythm.

4. Encourage children in individuality of expression in performing the rhythm. Occasionally, when a child shows special originality in expressing a rhythm, have him demonstrate his movement before the group.

5. After children have mastered the fundamental rhythms, develop combinations of these movements and include interpretive activities. In the upper elementary grades, the children will be able to create original rhythmic patterns adapted to given music forms.

Singing Dances and Folk Dances

Singing dances (frequently) and folk dances are presented here as separate rhythmic activity types. However, the differences between the two are frequently difficult, if not impossible, to distinguish. A singing dance is one where the verses are usually sung as the dance is performed and the verses give direction to the movement. A folk dance is a traditional dance of some country; however, singing dances also have folklore origins. In singing dances, the children are encouraged to vary the movement patterns in accordance with their interpretation of the verses. In folk dances, a definite routine is customarily prescribed, although some freedom of interpretation may still be allowed.

The teaching of singing dances and folk dances follows much the same instructional pattern. Consequently, the following suggestions for their conduct apply equally to both dance forms.

1. For singing dances, teach the verse or verses first. These may be placed on the blackboard where the children can see and follow them. Then introduce the appropriate music and practice music and verse together.

2. Teach the action required for the singing game or the steps necessary for the folk dance. Simple dances may be taught as a whole. More detailed or complicated dances, however, should be divided into a number of sequential parts.

3. Finally, combine the dance with the music. In some instances, the music may be introduced earlier, as the various parts of the dance are learned. The teacher should be alert to any adjustments in the dance step sequences when applied to the prepared dance records.

4. Emphasize the spirit of the dance. This is much more important, *actually, than precision of movement. Dances are to be enjoyed; they should be creative and spiritual expressions. The joy of participation should be paramount.*

5. Review learned dances occasionally, thus permitting children the pleasure of participation in joyful activities they know. A good way to do this is to start each dance period with a familiar dance. The period may also be ended in the same way. At times, allow the children to choose the singing dance or folk dance they would like to do.

Singing games and dances require various formations. The common formations are as follows: (1) Single circle, with (a) all facing center, (b) all facing counterclockwise, (c) partners facing center, and (d) partners facing each other. (2) Double circle, with (a) partners facing each other and (b) partners facing counterclockwise. (3) Longways in double line with partners facing each other.

When partners are utilized, some random way of pairing boys and girls should be adopted. A simple way is to form the boys in a line on one side of the room and the girl in a line on the other side. Have them march in a column toward each other and down the center in pairs. Changes in partners should be made occasionally as the dance period progresses; this can easily be done by rotating the boys (or the girls) one partner each time.

LOW-LEVEL ACTIVITIES

Low-Level Rhythms

The low-level rhythms selected for this chapter are simple in movement, involve imaginative play, and are generally vigorous in nature. Certain of the RCA Victor record albums contain music that may be used with many of these rhythms.

Balloons

Assume that there are big, little, all kinds of balloons in the air. Pretend to keep them floating in the air by tapping them first with one hand and then with the other. *The action should be light and feathery.*

Dolls

The children imitate dolls to music, walking about, moving the arms, turning the head, changing direction, and the like. All movements should be short, stiff, and jerky.

Galloping

Pretend to be the horse a cowboy is riding; gallop vigorously about the room.

Running

The children run around the play area, keeping in step with music or the teacher's count; vary the length of steps and quickness of steps.

Skipping

The children skip around the play area. The skip should be bounding, light, and free; it may be fast or slow. The children should start by skipping alone; later, they may skip in pairs and, finally, in groups.

Spring Garden

As a more advanced rhythm at the low level, the children may develop a dance-story about the spring garden. They may take the parts of flowers, bees, birds, and butterflies; they may respond to the wind, the sun, and the rain. The children can act these parts, as well as children, themselves, as they come to the garden to pick the flowers and to play.

Swinging

The children place one foot in front of the other and pretend to be pushing a swing in rhythm.

Tin Soldiers

While holding themselves erect, the children march around the room like soldiers. A number of variations may be worked out as a more advanced rhythm, including: holding a rifle or a flag or twirling a baton; imitating a drum majorette; playing different band instruments, such as a drum, horn, flute, and the like.

Tiptoe

The children walk lightly about on tiptoe, stretching tall, with arms swinging free. Variations may be provided by having them stretch arms in front, to the sides, and overhead.

Toy Shop

As a more advanced rhythm at the low level, the children could develop a dance-story about the toy shop. They may imitate any number of toys, including dolls, band instruments, animals, trains, and so forth.

Walking

All sorts of walking conditions may be imitated, including walking to school, through the snow, up a hill, in sand, against the wind, and

the like. Stress good, erect posture, deep breathing, and vigorous arm swinging.

Whirlwind

Imitate the scattering of leaves by the wind. The force of the wind and the tempo may be varied from mild to whirlwind proportions.

Low-level Singing Dances

Most of the singing dances included in this book are presented at the low level. These have traditionally enjoyable dances for young children.

A-Hunting We Will Go (English)

RECORD. Victor E-87, WE-87; Folkraft 1191.

VERSE. Oh, a-hunting we will go,
A-hunting we will go,
We'll catch a fox and put him in a box,
And then we'll let him go.

Chorus: Tra la la la la la la
Tra la la la la la
Tra la la la la la la la la
Tra la la la la la

FORMATION. Preferably, form sets of six couples each. Couples are arranged in double line, with a space between, and facing each other.

DANCE. During singing of the *verse*, the first couple clasp hands in skater's position (facing same direction with right hands and left hands clasped). They then skip down between the lines to the foot of the set, turn without unclasping their hands, and skip back. The other children clap their hands to the music as this is going on. During singing of the *chorus*, the head couple separates and each leads his own line down the outside to the foot of the set. The head couple meets again at the foot of the set and forms an arch with their hands, through which the other couples skip after joining hands. The original head couple is now at the foot of the set and the original second couple is at the head; the dance continues until all couples have been head couples.

Baa, Baa, Black Sheep (Mother Goose)

RECORD. Victor E-83, WE-83.

VERSE. Baa, baa, black sheep, have you any wool?
Yes sir, yes sir, three bags full.
One for my master and one for my dame,
And one for the little boy who lives down the lane.

FORMATION. Single circle, facing inward.

DANCE. This is a simple dance, mostly pantomime, and is a good

one upon which to start the children. As the lines are sung, perform the following actions. (1) Stamp three times, shake forefinger three times. (2) Nod head twice and hold up three fingers, shaking them three times. (3) Bow to the person on the right and then to the person on the left. (4) Hold one finger high and walk around in a small circle and again face the center.

Did You Ever See a Lassie? (Scottish)

RECORD. Victor E-87, WE-87; Folkraft 1183.

VERSE. *Did you ever see a lassie, a lassie, a lassie,
Did you ever see a lassie do this way and that?
Do this way and that way, and this way and that way,
Did you ever see a lassie do this way and that?*

FORMATION. *Single circle, facing inward.*

DANCE. One child stands within the circle; the other dancers join hands. During the singing of the first two lines, move to the right around the circle, while the child in the center performs some simple stunt or vigorous action. As they sing the last two lines, all children imitate the action of the child in the center. As the verse starts over, the center child chooses another to replace him. A good practice is to have boys choose girls and girls choose boys. Emphasize the need for choosing different children as the dance progresses.

Farmer in the Dell (American)

RECORD. Victor E-87, WE-87; Folkraft 1182.

VERSE. *The farmer in the dell
The farmer in the dell
Heigh-O, the dairy-O
The farmer in the dell.
The farmer takes a wife
The farmer takes a wife
Heigh-O, the dairy-O
The farmer takes a wife.*

Continue with separate verses:

*The wife takes a child
The child takes a nurse
The nurse takes a dog
The dog takes a cat
The cat takes a rat
The rat takes the cheese
The cheese stands alone*

FORMATION. *Single circle, facing inward.*

DANCE. One child is the Farmer and stands within the circle; the others join hands and circle to the right around him singing the first verse. During singing of the second verse, the Farmer chooses a Wife,

who joins him within the circle. Then the Wife chooses a Child, and the choosing goes on until the Rat has taken the Cheese. The Cheese standing alone becomes the next Farmer for continuing the dance.

How D'Ye Do, My Partner? (Swedish)

RECORD. Victor EPA-4144 (45 RPM); Folkraft 1190.

VERSE. How d'ye do, my partner?
How d'ye do today?
Will you dance in the circle?
I will show you the way.

Chorus: Tra la la la la la
Tra la la la la
Tra la la la la la
Tra la la la la la

FORMATION. Double circle, boys on the inside, girls on the outside, partners facing each other.

DANCE. The dance performance as the lines of the verse are sung is as follows: Line 1: The boys bow deeply to their partners. Line 2: The girls curtsy to the boys. Line 3: Partners grasp right hands, bending to the left, and look at each other through the arch. Line 4: Partners grasp left hands, bending to the right, and look at each other through this arch. Chorus: With inside hands joined, the dancers skip counterclockwise around the circle. At the end of the chorus, the girls step forward to a new partner.

Jolly Is the Miller (American)

RECORD. Victor E-57, WE-57; Folkraft 1192.

VERSE. Jolly is the miller who lives by the mill,
The wheel goes 'round with a right good will,
One hand in the hopper and the other in the sack,
The right steps forward and the left steps back.

FORMATION. Double circle, boys on the inside, girls on the outside, facing counterclockwise.

DANCE. A Miller is in the center of the circle; all partners join inside hands. As the verse is sung, the children march around the circle. During the second line (when the "wheel goes round and round"), the partners make their outside arms go in a circle in imitation of a wheel. When the last line is sung, the children change partners. At this point the Miller tries to get a partner; the child left without a partner becomes the next Miller.

Looby Loo (English)

RECORD. Victor E-57, WE-57; Folkraft 1184.

VERSE. In this dance, a chorus is sung before each verse, as follows:

Here we dance looby loo,
 Here we dance looby light,
 Here we dance looby loo,
 All on a Saturday night.

First verse:

I put my right hand in,
 I take my right hand out,
 I give my right hand a shake, shake, shake,
 And turn myself about.

Subsequent verses:

I put my left hand in
 I put my right foot in
 I put my left foot in
 I put my head way in
 I put my whole self in

FORMATION. Single circle, facing inward.

DANCE. During the singing of the verse, the children skip counter-clockwise around the circle. During each verse, they stop, face center, and act out the action.

Muffin Man (English)

RECORD. Victor E-87, WE-87; Folkraft 1188.

VERSE. Oh, do you know the muffin man,
 The muffin man, the muffin man?
 Oh, do you know the muffin man,
 Who lives in Drury Lane?

Continue with separate verses:

Oh, yes we know the muffin man
 Four of us know the muffin man
 Eight of us know the muffin man
 Sixteen of us know the muffin man
 All of us know the muffin man

FORMATION. Single circle, facing inward.

DANCE. The children stand around the circle; one child is the Muffin Man and stands in the center of the circle. As the first verse is sung, the Muffin Man skips around the center area and chooses a partner. During the singing of the second verse, the action is the same, except that two children skip around the circle and each chooses a partner. This process continues with subsequent verses until all children have been chosen. When all have been chosen, the last verse is sung while all children skip about the room.

Mulberry Bush (English-American)

RECORD. Victor E-87, WE-87; Folkraft 1183.

VERSE. In this dance, a chorus is sung before each verse, as follows:

Here we go 'round the mulberry bush,
 The mulberry bush, the mulberry bush,
 Here we go 'round the mulberry bush
 So early in the morning.

First verse:

This is the way we wash our clothes,
 Wash our clothes, wash our clothes,
 This is the way we wash our clothes
 So early Monday morning.

Subsequent verses:

This is the way we iron our clothes,
 (So early Tuesday morning)
 This is the way we mend our clothes,
 (So early Wednesday morning)
 This is the way we sweep our floor,
 (So early Thursday morning)
 This is the way we scrub our floor,
 (So early Friday morning)
 This is the way we make a cake,
 (So early Saturday morning)
 This is the way we go to church,
 (So early Sunday morning)

FORMATION. Single circle, facing inward, hands joined.

DANCE. During the singing of the verse, the children walk or skip counterclockwise in the circle. On the words "so early in the morning," each child drops hands and makes a complete turn in place, again facing toward the center. During the verses, the children imitate the action indicated by the words. As the last verse is sung, the children skip in file around the room, as though "going to church."

Oats, Peas, Beans, and Barley (English)

RECORD. Victor E-87, WE-87; Folkraft 1182.

VERSE. Oats, peas, beans, and barley grow,
 Oats, peas, beans, and barley grow,
 Can you or I or anyone know,
 How oats, peas, beans, and barley grow?
 First, the farmer sows the seed,
 Then, he stands and takes his ease,
 He stamps his foot and clasps his hands
 And turns around to view his lands.
 Waiting for a partner,
 Waiting for a partner,
 Open the ring and choose one in
 While we all dance and gaily sing.
 Now you've married, you must obey,
 You must be kind in all you say;
 You must be kind, you must be good,
 And keep your wife in kindling wood.

FORMATION. Single circle, facing center, hands joined, with a Farmer in the center.

DANCE. The dance as performed by verses is as follows: Verse 1: The children walk clockwise around the Farmer. Verse 2: All stop, face the center, and imitate the action indicated by the words. Verse 3: The children again walk around the circle, while the Farmer chooses a Partner; the Partner joins the Farmer in the center. Verse 4: Everyone skips around the circle. The dance may be repeated as many times as desired, with a new Farmer each time.

Shoemaker's Dance (Danish)

RECORD. Victor 41-6171, 45-6171; Folkraft 1187.

VERSE. See the cobbler wind his thread,
 Snip, snap, tap, tap, tap,
 That's the way he earns his bread,
 Snip, snap, tap, tap, tap.
 So the cobbler blithe and gay,
 Works from morn to close of day.
 At his shoes he pegs away,
 Whistling cheerily his lay.

FORMATION. Double circle, partners facing, boys on the inside.

DANCE. The dance as performed by lines of the verse is as follows: Line 1: Clenched fists are held in front about chest high; quickly roll one fist over the other three times; reverse direction of roll and repeat. Line 2: Pull fists apart twice with short, jerking motions, to represent pulling the thread tight; clap hands three times. Line 3: Repeat action for line 1. Line 4: Fingers form a scissors and make two cuts on "snip, snap"; double fists and hammer one on top of the other three times on "tap, tap, tap." Chorus: Partners join inside hands, outside hands on hips, and skip counterclockwise around the circle. The girls move forward to a new partner for each repetition of the dance.

Ten Little Indians (American)

RECORD. Victor E-87, WE-87; Folkraft 1197.

VERSE. One little, two little, three little Indians,
 Four little, five little, six little Indians,
 Seven little, eight little, nine little Indians,
 Ten little Indian boys.
 Ten little, nine little, eight little Indians,
 Seven little, six little, five little Indians,
 Four little, three little, two little Indians,
 One little Indian boy.

FORMATION. Single circle, facing inward, numbered from one to ten (more than one may have the same number).

DANCE. As each number is sung in the first verse, the children who have that number squat. During the second verse, the children stand when their number is sung. As the verses are repeated, all children move around the circle in Indian fashion, crouching and shielding the eyes. (The Indian step is a bouncing toe-heel step: step on the ball of the foot and then lower the heel to the floor; the bouncing movement comes from the knees.)

Thread Follows the Needle

RECORD. Victor E-87, WE-87.

VERSE. *The thread follows the needle,
The thread follows the needle,
In and out the needle goes,
As mother mends the children's clothes.*

FORMATION. A single line of about ten children standing side by side with hands joined. The child at one end is the needle, and the child at the other end is the knot.

DANCE. The Needle leads, drawing the other children after him, passes under the raised arms of the Knot and number 9, and continues back to his original position. This causes the Knot and 9 to face in the opposite direction with their arms crossed in front of their bodies. The Needle then goes under the raised arms of numbers 9 and 8, forming another stitch. This process is continued until the entire line has been stitched, with the Needle turning under his own arm at the end. To "rip" the stitch, the children raise their arms overhead and turn back to original positions. The dance may be repeated with a new Needle and Knot.

Low-level Folk Dances

A limited number of formal folk dances only are included at the low level.

Children's Polka (German)

RECORD. Folkraft 1187.

FORMATION. Single circle, partners facing each other; hands joined and arms extended at shoulder height.

DANCE STEPS. (1) Take two slide steps (step, close; step, close) toward the center; stamp three times in place. (2) Repeat, moving back to places, include three stamps. (3) Repeat steps 1 and 2. (4) Clap thighs with hands, clap own hands, clap partner's hands; repeat two more times. (5) Place right heel forward, toe upward, place right elbow in left hand, and shake finger at partner three times; repeat with opposite

foot and hand. (6) Turn around in place, taking four running steps; face partner and stamp three times in place.

Chimes of Dunkirk (French)

RECORD. Victor EPA-4141 (45 RPM); Folkraft 1188.

FORMATION. Double circle, partners facing each other; hands placed on hips.

DANCE STEPS. (1) Stamp three times in place. (2) Clap own hands three times. (3) Join hands with partner and turn in place with seven running steps. (4) Repeat steps 1 to 3. (5) Partners standing side by side with inside hands joined and outside hands on hips; skip around the circle for eight measures of the music (16 skips).

Dance of Greeting (Danish)

RECORD. Victor 41-6183, 45-6183; Folkraft 1187.

FORMATION. Single circle, facing inward; partners side by side, with boy on left of girl.

DANCE STEPS. (1) Dancers clap own hands twice, and bow to partner (girls may curtsy). (2) Repeat, bowing to neighbor. (3) Stamp right foot, stamp left foot. (4) Turn around with four running steps in place. (5) Repeat steps 1 to 4. (6) All join hands in the circle and run counter-clockwise for four measures (16 steps). (1) Repeat step 6, but run in the opposite direction.

MIDDLE-LEVEL ACTIVITIES

Middle-level Rhythms

The middle-level rhythms are, of course, more advanced than those at the low level, and they require a more imaginative interpretation.

Chinese Dolls

Imitate the "walk" of a Chinese doll. The steps are short and quick; the feet are not raised from the floor.

Chopping Wood

In this rhythm, the children are "Paul Bunyans." They pretend to have large axes in their hands and are chopping down trees. Once a tree is felled, they trim it, chop it into firewood logs, and carry the logs to the woodshed.

Christmas Toys

Each child chooses a toy he wishes to imitate. This may be a clown, fireman, policeman, cowboy, Indian, spaceman, soldier, jack-in-the-box, engineer, and so forth.

Halloween

For this rhythm, the children can plan interesting sequences. They may take various characters associated with Halloween, such as the old witch on a broomstick, the witch with her caldron, bats circling, ghosts gliding, goblins dancing, and others.

Hoisting Sails

Be "Pop-Eye, the sailor man," and hoist the sails. Keep a good rhythm while pulling strongly on the rope.

Ice Skating

For this rhythm, the children pretend to be ice skating. Many maneuvers are possible, all of which should be done in time, including: long smooth strokes, short choppy strokes, jumping, backward skating, simple figures, and the like.

Jumping Rocks

The children pretend that they are at the beach and that there are many rocks scattered nearby. Make three jumps from one rock to the next, than take four short steps to the next set of rocks, and so on.

Paddling Canoes

By kneeling on the floor, the children can imitate paddling canoes. If paddling from the left side, the right hand is high; vice versa for the right side.

Pulling a Load

Imitate pulling a heavy load. In making the movement, one foot should be in front of the other; reach far forward with the weight on the front foot; as the weight is pulled backward, transfer the body weight to the rear foot.

Shoveling

Imitate digging in the sand at the beach or shoveling snow off the sidewalk.

Skiping Partners

Separate the class into boy-girl partners, scattered about the room. Dividing the rhythmic activity into phases, the boys and girls alternately skip around their partners.

Swimming

The children do a slow, relaxed crawl stroke in rhythm. In performing this stroke, bend forward slightly at the hips; reach far forward with the

right arm, pull down toward body and back, bending elbow and lifting arm as the next stroke is started; the left arm works in the same way, but alternately.

Middle-level Singing Dances

As indicated above, most of the singing dances presented in this book are included as low-level activities. However, several more advanced and popular dances of this sort are proposed for the middle level, as described in this section.

Carrousel (Swedish)

RECORD. Victor 41-6179, 45-6179, Folkraft 1183.

VERSE. Little children, sweet and gay,
Carrousel is running.
It will run 'til ev'ning.
Little ones a nickel, big ones a dime,
Hurry up, a mate,
Or, you'll surely be too late.

Chorus: Ha, ha, ha, happy are we,
Anderson and Peterson and Henderson and me.
Ha, ha, ha, happy are we,
Anderson and Peterson and Henderson and me.

FORMATION. Double circle, facing inward. Dancers in the inner circle join hands; those in the outer circle place their hands on the shoulders of the children in front. The inner circle represents the merry-go-round horses; the outside circle, the riders.

DANCE. During the verse, the children take slow slide steps (step, close) to the left. This gets the merry-go-round under way slowly. As the dance continues, the tempo quickens. At the end of the phrase, "or you'll surely be too late," the children stamp three times. Each time the chorus is repeated, the merry-go-round reverses direction.

Pop, Goes the Weasel (American)

RECORD. Victor 41-6180, 45-6180.

VERSE. All around the vinegar jug,
The monkey chased the weasel;
The teacher pulled the stopper out,
Pop, goes the weasel.
Penny for a spool of thread,
Penny for a needle;
That's the way the money goes,
Pop, goes the weasel.

FORMATION. Double circle, boys on the inside and girls on the outside; each set of two couples facing each other.

DANCE. (1) Couples walk or skip four steps forward and then four steps backward. (2) Each set of two couples joins hands and skips clockwise one full turn, returning to position. (3) Number 1 couple lifts joined hands and number 2 couple skips under to progress forward to meet the next number 1 couple. The dance continues.

Shoo Fly (American)

RECORD. Victor E-87, WE-87; Folkraft 1185.

VERSE. Shoo fly, don't bother me,
Shoo fly, don't bother me,
Shoo fly, don't bother me,
I belong to somebody.
I feel, I feel,
I feel like a morning star.
I feel, I feel,
I feel like a morning star.

FORMATION. Single circle, facing inward; partners, with girl on boy's right.

DANCE. The dance as performed by lines of the verse is as follows: Line 1: Walk to center of circle, four steps. Line 2: Walk backward to place, four steps. Line 3: Partners join right elbows and swing four steps around. Line 4: Repeat, joining left elbows. Lines 5, 6, and 7: All join hands and circle right. Line 8: Each girl turns under her partner's left arm; this changes the partners for a repetition of the dance.

Yankee Doodle

RECORD. Victor E-87, WE-87.

VERSE. Yankee Doodle came to town
Riding on a pony,
Stuck a feather in his hat
And called it macaroni.
Yankee Doodle keep it up,
Yankee Doodle dandy;
Mind the music and the step,
And with the girls be handy.

FORMATION. Form sets of three (actually, a triple circle), facing counterclockwise.

DANCE. When singing the verse, the dancers march around the circle, raising knees high like prancing ponies and swinging arms back and forth. On the first two lines of the chorus, the center dancer of each set joins hands with the dancer on his right with his right hand, and they skip around each other; during the last two lines, he does the same with the left-hand dancer, but uses his left hand. As the dance is repeated, the center dancers move forward one set, so as to change partners.

Middle-level Folk Dances

The number of folk dances increases for the middle level, as more intricate steps are presented.

Bleking (Swedish)

RECORD. Victor 41-6169, 45-6169; Folkraft 1188.

FORMATION. Single circle, partners facing (or double circle, partners facing) with both hands joined.

DANCE STEPS. (1) Hop on the left foot, placing right heel forward with right leg straight; at the same time, thrust the right hand forward. Repeat, changing foot and arm. (2) Repeat step 1, but with three quick changes instead of two. (3) Repeat steps 1 and 2. (4) Repeat steps 1 to 3. (5) Dance seven hops, turning clockwise with partner; stamp on the eighth count. (6) Repeat step 5, reversing direction.

Come Let Us Be Joyful (German)

RECORD. Victor 41-6177, 45-6177; Folkraft 1195.

FORMATION. Sets of six, three opposite three, in a circle (thus, a triple circle); dancers in each line of three join hands.

DANCE STEPS. (1) The two lines of three walk toward each other and bow; walk backward to original positions and bring feet together. (2) Repeat step 1. (3) Center dancer in each set of three hooks right elbow with partner on the right and turns in place with four skipping steps; at the same time, the free dancer skips in a small circle. (4) Step 3 is repeated, except that the center dancer hooks elbows with the partner on the left. (5) Repeat steps 3 and 4. (6) Repeat step 1. (7) The lines of three walk toward each other again, but this time, dropping hands, move through (to the left of corresponding dancers in the other line) to the oncoming group, thus, a new set of six is formed for continuance of the dance.

Crested Hen (Danish)

RECORD. Victor 41-6176, 45-6176, Folkraft 1194.

FORMATION. Sets of three scattered around the room, composed of one boy and two girls or one girl and two boys; each set of three joins hands to form a small circle.

DANCE STEPS. These steps are described for a set composed of one boy and two girls; adjust steps if sets are composed of one girl and two boys. (1) Starting with the left foot, the dancers take four step-hops clockwise and stamp four times. (2) Repeat four step-hops in opposite direction, and stamp four times; the girls drop hands, while keeping hold

of the boy's hands, and finish in a straight line. (3) With four step-hops, the girl on the right passes in front of the boy, through an arch formed by the boy and the other girl, and back to place; the boy turns under his left arm with four stamps, while the other girl takes four stamps in place. (4) Repeat step 3 with the girl on the left.

Cshebogar (Hungarian)

RECORD. Victor 41-6182, 45-6182; Folkraft 1196.

FORMATION. Single circle, facing inward; partners side by side, with boy on left of girl; all hands joined.

DANCE STEPS. (1) All circle to the right with eight sliding steps. (2) Repeat step 1 to the left. (3) Take four skips to the center and four backward to place. (4) Partners face each other and dance the Hungarian turn in place (place right arm around waist of partner, raise left arm above head, hop-step around each other twice). (5) Partners face each other in single circle, boy places hands on girl's waist and girl places hands on boy's shoulders; take four draw steps (step, close) toward center of circle, and four draw steps (step, close) back to place. (6) Take two draw steps toward center of circle and two draw steps back to place. (7) Repeat Hungarian step twice, finishing with a shout.

Gustov's Skoal (Swedish)

RECORD. Victor 4-6170, 45-6170, Folkraft 1175.

FORMATION. Four couples in a square, each facing the center; boy on left of girl; couples join inside hands, with outside hands on hips. Two opposite couples are designated as head couples; the other two couples, as side couples.

DANCE STEPS. (1) Head couples in each set walk forward three steps and bow to opposite couple; take three backward steps, and partners bow to each other. (2) Side couples perform step 1. (3) Repeat steps 1 and 2. (4) Side couples make a high arch with inside hands; head couples skip forward to center with four skips; each drops partner's hands and joins hands with the opposite dancer; skips with newest partner under nearest arch (four skips); drops new partner's hands and skips four times back to place. (5) All partners hook right elbows, left hands on hips, and circle around each with four skipping steps. (6) Steps 4 and 5 are repeated, but with side couples performing the dance and the head couples forming the arch.

Hansel and Gretel (German)

RECORD. Victor 41-6182, 45-6182; Folkraft 1193.

FORMATION. Double circle; partners facing, with boys on inside.

DANCE STEPS. (1) Girls step to right and curtsy and then to the left

and curtsy, while boys step to left and bow and step to right and bow. (2) Partners, still facing, join both hands, but right hand with right hand and left with left. (3) Both partners jump and place right heel on floor, diagonally from body; repeat with left heel. (4) Leaning away from partner, turn around in a small circle with four fast steps. (5) All partners face around circle with inside hands joined and outside hands on hips, skip forward 16 times. (6) Partners face each other, with hands on hips, stamp three times, right, left, right. (7) Stand still one count; clap hands three times. (8) Repeat steps 3 and 4. (9) Partners face each other with hands on hips (one count), nod head three times. (10) Stand still one count, snap fingers three times.

Oh, Susanna (American)

RECORD. Victor 41-6178, 45-6178; Folkraft 1186.

FORMATION. Single circle, facing inward; partners side by side, with boy on left of girl.

DANCE STEPS. (1) Girls walk four steps toward the center and four steps back. (2) Boys do the same. (3) Partners face each other, do a grand right and left around the circle (right hand to partner, left hand to next in line, and so on), until seventh person is reached. (4) With seventh person, promenade counterclockwise around the circle. To promenade, boy has his right arm around girl's waist, takes her left hand in his so that her arm is in front of him.

Virginia Reel (American)

RECORD. Victor 41-6180, 45-6180, Folkraft 1249 (with calls), 1312 (without calls).

FORMATION. Six to eight couples, forming two lines about eight steps apart and facing each other, boys in one line, girls in the other; each line joins hands. Designate the couple at one end of the set as the head couple, and the couple at the other end as the foot couple.

DANCE STEPS. (1) Lines move forward and back with four skipping steps each way. (2) Drop hands, partners advance toward each other, join right hands, turn once around, and return to place. (3) Repeat with left hands. (4) Repeat with both hands. (5) Partners advance, do-si-do, passing left shoulders. (7) Head couple joins hands and moves down the center between the lines with eight sliding steps. (8) Slide back down center to place.

(9) Head couple link right elbows and turn once and a half around, so that the boy faces the girls' line and the girl faces the boys' line; perform the reel in the following manner: The head girl (and the same applies to the boy) links left elbows with the first boy in line and turns him once around; the head couple meet in the center, link

right elbows and turn once around; they then proceed to the next dancer in each line as before, and so on down the line. (10) After turning the last dancers in line, the head couple again meet in the center, but this time join hands, make one-half turn, and slide up the center to their original positions. (11) All couples turn to face the head couple; the head girl leads the line of girls and the head boy leads the line of boys to the foot of the set. When the head couple meet at the foot of the set, they join hands high, forming an arch; the other dancers pass under the arch, move up the center and re-form the set (the original head couple is now the foot couple and the second couple is the head couple). (12) The dance is repeated until all couples have been head couples.

HIGH-LEVEL ACTIVITIES

High-level Rhythms

By the time the high level has been reached, the rhythmic activities will largely consist of folk dances. However, a limited number of rhythms are included below for this level.

Cutting

This is a rhythmic step performed as follows: Step forward on the right foot and spring off this foot, bringing the right leg up in front, with knee straight; land on left foot. Continue in this manner.

Hopping

For this rhythmic movement, take a step to the right, hop two times right, and repeat to the left. As the children become adept with this step, they may combine it with turns and skips.

Marching

The march should be performed with good, military posture. Various marching routines may easily be worked out; the children would enjoy developing these.

Running

Running in unison can be fun, as well as being an invigorating activity. Various types of runs can be utilized, including: running on the toes, running flat-footed, high-stepping runs, and running with short steps and with long steps. The children may work out various running routines. An interesting routine is for the whole class to follow a leader through a maze, as shown in Fig. 10.1.

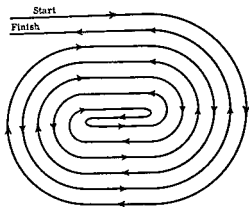


FIG. 10.1 Maze Running

Sliding

At first, sliding should be done individually with the children changing the direction of the slides as variations are developed. Later, they can join hands with a partner and perform the slides together, either facing each other or by both facing forward with arms crossed, as is frequently done when skating in pairs.

Walking

Ordinary walking in good posture may be performed rhythmically. However, many variations may be originated by imitating the manner in which various animals and birds walk.

High-level Folk Dances

A number of more intricate folk dances are presented for children capable of high-level performances.

Ace of Diamonds (Danish)

RECORD. Victor 41-6169, 45-6169; Folkraft 1176.

FORMATION. Double circle; partners facing, with boys on inside.

DANCE STEPS. (1) Clap hands twice, join left hands with partner, and circle partner counterclockwise with three polka steps (hop on right foot, step forward on left, draw right foot up to left, step forward with left; hop on left foot as step is repeated). (2) Repeat step 1, except join right hands and circle clockwise. (3) Boy circles girl with four step-hops, returning to place. (4) Girl does same, circling boy. (5) Partners join right hands and polka around the circle. As the dance is repeated, the boys move forward one step to a new partner.

Irish Lilt (Irish)

RECORD. Burns Record Co., 755 Chicadee Lane, Stratford, Conn. (Album J).

FORMATION. Informal groups, facing in same direction; hands on hips.

DANCE STEPS. (1) Start with right foot forward off floor; bring right foot to floor replacing left foot, and moving left foot to rear off floor (cutting movement); bring left foot back to floor and right foot forward again; complete six movements. (2) Break, by jump to feet-astride position; jump to stride position; jump landing with feet together; hop on right foot, raising left foot forward, off floor. (3, 4) Repeat steps 1 and 2, but with left foot forward to start. (5) Touch right toe forward four times, while hopping four times on left foot, repeat four times to opposite side. (6) Touch right toe forward two times while hopping two times on left foot; repeat two times to opposite side. (7) Touch right foot sideward with the toe inverted, heel up, hop on left foot; hop again on left foot, again touching right foot sideward, but with toe up, heel down; repeat to opposite side; continue alternately for four repetitions of right and left movements. (8) Complete the dance with a break (step 2).

Sellinger's Round (English)

RECORD. Victor 41-6174, 45-6174; Folkraft 1174.

FORMATION. Single circle, facing inward; partners side by side, with boy on left of girl; all hands joined.

DANCE STEPS. (1) Take eight slides to the right around circle and eight slides back. (2) Partners face each other, pass to left, and walk to new dancer; link right elbows and turn once around; return to place, link elbows, and turn once around with original partner (16 counts). (3) Girls go toward center four steps and back to place, while boys go away from center four steps and back to place. (4) Boys go toward center four steps and back to place, while girls go away from center four steps and back to place. (5, 6) Repeat steps 3 and 4. (7, 8) Repeat steps 1 and 2.

Sicilian Circle (American)

RECORD. Folkraft 1242.

FORMATION. Double circle; each two couples facing each other in a set; girls on the right side of boys.

DANCE STEPS. (1) Couples with inside hands joined take four steps forward and bow; four steps backward to place. (2) Both couples in a set join hands in a circle and move around clockwise. (3) Couples give right hands to dancers opposite and pass through; couples turn and join inside hands so that they face opposite couples. (4) Repeat step 3. (5) Girls cross to opposite places by giving each other right hands and dropping hands as they pass; they then give left hands to opposite boys, who place right arms around their waists and turn them in place. (6) Step 5 is repeated as girls return to their original positions. (7) Repeat

step 1, or do-si-do (back to back). (8) Couples walk toward opposite couples, drop hands, and pass through; the girls walk through between the two boys. Each couple now faces a new couple, and the dance is repeated.

Turkey in the Straw (American)

RECORD. Victor E-75, WE-75.

FORMATION. Four couples in a square, each facing the center; boy on left of girl.

DANCE STEPS. (1) In each set, all join hands and walk to the center and back; repeat. (2) Boys swing their corners (girl of adjacent couples); then swing their partners. (3) First couple goes to second couple, join hands, and circle eight steps to the right and eight steps to the left. (4) Repeat step 2. (5) First couple repeats step 3 with third couple. (6) Repeat step 2. (7) First couple repeats step 3 with fourth couple. (8) Do-si-do (back to back) your partner and do-si-do your corner; allemande left; (9) Grand right and left. Allemande left is performed as follows: Boy and corner girl face each other, join left hands, turn each other around once, and return to position. Grand right and left is performed as follows: Partners face each other, join right hands and pass each other; drop hands and join left hands with next person; and continue alternating right and left hands until dancers return to their original positions.

SUMMARY

In this chapter, rhythms, singing dances, and folk dances appropriate for the elementary school physical education program were presented. The usual classification of low, middle, and high levels adopted in previous chapters was continued. Suggestions were given on the methodology to employ in teaching these activities. Stress was placed on the desirability of utilizing rhythms and dances for fostering self-expression. Many of the dances have folklore origins, involving a number of countries; as a consequence, this phase of physical education offers excellent opportunities for integration with other school subjects.

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Chapter

11

Physical Education Evaluation

ELEMENTARY SCHOOL TEACHERS are well aware of the importance and use of tests and examinations in their classroom work. They constantly assess their pupils' mastery of the subjects taught and their consistent progress toward achievement goals throughout the grades. In addition, they and the school need to know the general intelligence level of each child; the slow readers are frequently especially identified in the upper elementary grades so that remedial steps may be taken; and the aptitude of individual boys and girls toward the various phases of the educative process may also be evaluated. This is good and is a thoroughly professional activity. For many of the same reasons, testing should be done in relation to physical education.

PURPOSES OF EVALUATION

In evaluation, the status of boys and girls in relation to a given trait or body of knowledge is determined. Once status is known, several other processes are possible, including: comparison of each individual with a norm or standard in order to arrive at his or her level of achievement; comparison with others when homogeneous classifications are desired; and, after a time lapse, comparison of each individual's score with a former score in order to note change—hopefully, progress.

Evaluation may be applied to the pupil's mastery of subject matter. In health education, this would mean health knowledge; testing here would be quite similar to testing in other subject-matter fields, such as English, arithmetic, social studies, and the like. Appropriate tests could be prepared by the teacher, based upon the specific material presented

OBJECTIVE WRITTEN TESTS. Objective written tests may be used at times in physical education to evaluate pupils' knowledge of the rules, strategy, and history of various games, sports, and other activities. Validity is usually based on the curricular content involved in the area of the test to be constructed. If a standardized test for nationwide use is contemplated, the content must be broad and comprehensive rather than provincial and limited. In this instance, determination of content area may be based on an analysis of textbooks, courses of study, and so forth, in the test subject. Potential questions for the test are then drawn from this material in proportion to the relative weightings for the different phases identified.

Once the scope of the objective written test is determined and the initial selection of questions has been made, the test items are given to a representative sample of boys and girls at the age or grade levels for which the test is intended. Item difficulty is determined by computing the percentage of pupils passing it; the fewer passing the item, the more difficult the question. Item discrimination is obtained in several ways: by contrasting the answers of the more competent pupils in a grade with those of the less competent, by comparing the upper third or fourth of the group on the entire test with the lowest third or fourth, and by contrasting the percentage passing each item for successive grades in school. Various indices of discrimination are in use. From these analyses, only those questions with satisfactory discriminative value are retained; the final selection of questions to compose the test are chosen so as to include the full range of difficulty, distributed as evenly as possible from easy to hard.

MOTOR ACHIEVEMENT TESTS. A preponderance of physical education testing is related to some phase of motor achievement. This testing takes many forms: various sports fundamentals, such as shooting or dribbling a basketball; over-all ability in a sport or physical activity, such as in basketball or baseball; individual motor traits, such as speed, agility, and reaction time; general motor ability, as a combination of basic motor traits; components of physical fitness, consisting of muscular strength, muscular endurance, and circulatory endurance; posture and body mechanics, including fundamentals of movement. Usually, the establishment of such tests as sports fundamentals and individual motor traits needs little more than the standardization of techniques to provide accurate testing. To deal with other types of tests, however, research evidence of validity is essential.

In validating a test, a criterion of the element being measured must be established with which to compare the new test. When considering the validity of these tests, therefore, the teacher must evaluate two

in class; or she may prefer to rely, in part at least, upon standard achievement tests constructed in this field.

The subject matter of physical education is composed of skills, strategy of games, knowledge of rules, and the history of sports. Teacher-made tests can be used, or standard skill and knowledge tests may be preferred when available. In physical education, however, the improvement in certain fundamental traits may be of as great, if not greater, import to the teacher. Thus, such traits as physical fitness, social efficiency, and recreational competency are related to the basic objectives of physical education; through the proper selection and effective presentation of physical education activities, these fundamental values may be improved and developed. Tests to evaluate them, then, become extremely important if progress toward their realization is to occur.

EVALUATION OF TESTS

When standard tests are constructed, a number of well-defined processes are carried out; these include the validation of the test, the determination of the precision with which the test can be given, and the preparation of norms and/or standards for the test. These procedures are conducted in a variety of ways; further, their applications are quite different in constructing tests of knowledge as compared with skill tests.

Validity

When validity is considered, we ask: "Does the test measure what it purports to measure?" In some instances, this may be quite obvious; in other instances, it may not be. To measure a standing broad jump with a tape measure obviously provides a test of competency in this skill. However, to intimate that you have also measured the explosive power of the leg muscles as a human trait needs a good deal of explaining; it is not so obvious. To further stress this concept, let each elementary school teacher cogitate as to whether or not each of the following test relationships is clear or not clear to her: (1) The distance of a vertical jump, the number of chin-ups, and time on a shuttle run measure the motor fitness of elementary school boys. (2) Volleying a tennis ball against a wall for time is a valid test of over-all tennis-playing ability. (3) Tests of muscular strength and muscular endurance can be used with norms based on sex, age, and weight to measure two of the primary nonmedical components of physical fitness. None of these relationships will be clear to the teacher at this point. Properly, she will want proof before accepting them; to provide such proof is the purpose of the researcher in validating tests.

meaning of the reliability and objectivity of tests is indicated in physical education performance. Thus, *reliability* refers to the ability of the same tester to obtain consistent results, that is, self-consistency; *objectivity* is agreement between testers in administering the test to the same subjects. In this case, tests with high objectivity will also have high reliability, since an individual will agree more readily with himself in administering tests than he will with others.

The teacher, when using physical-performance tests, should be aware that, just because a high objectivity coefficient is reported for a test, it does not follow necessarily that she will be able to administer the test with the same degree of precision. Objectivity coefficients are obtained by trained and competent testers; such training may also be necessary for those using the test, before comparable results are possible. The following steps are suggested as a means whereby classroom teachers can train themselves to test properly: (1) Study carefully the exact directions given for administering the test, and follow these explicitly. (2) Give the test twice to a sample of subjects and examine the consistency of the measures. Exact duplication of scores from test to test will rarely occur; however, there should be a reasonable approximation. If you can compute a coefficient of correlation, you might well do so here, thus obtaining your own reliability coefficient. (3) If the test-retest process could be carried out with another teacher, this would be even better, as an objectivity coefficient could then be computed. (4) Continue training yourself to test until the reliability or objectivity coefficient is comparable to that reported for the test.

Norms

Norms are necessary in order adequately to interpret test scores. They provide a basis for assessing the pupil's level of ability in regard to a given trait. In health and physical education, norms may be derived in various ways. Certain of these are described briefly below.

PERCENTILES. This scale gives the percentage of individuals scoring below points in the scale. Thus, 60 per cent score below the 60th percentile and 10 per cent score below the 10th percentile. Although easily constructed and readily understood, this scale has the disadvantage of unequal values for equal differences in scale points. Actually, the percentile scale is crowded largely around the average performance, approximately two-thirds of the scale within the middle one-third of the range of scores.

T-SCALE. This scale is based on equal divisions of the base line of the normal probability curve; 0 would be five standard deviations below and 100 would be five standard deviations above the mean. Inasmuch

factors: (1) the degree to which the criterion measure represents the quality being measured; (2) the amount of relationship shown between the test and the criterion. The first of these factors requires a subjective evaluation based upon the teacher's critical appraisal. Evidence of the second factor will be given statistically, frequently through the use of correlational methods.

Accuracy of Tests

Obviously, a test would be of little worth if it could not be given with a fair degree of accuracy, competent testers should be able to obtain essentially the same results upon repeated tests of the same subjects when the time lapse between tests does not exceed a week or two. Exactness in testing human effort is seldom achieved; however, close approximations should be possible if a test is to be used in health and physical education. Test accuracy depends upon the precision of the measuring instrument and the technical competency of the tester. Both of these are reflected in the reliability and objectivity of tests as reported by their originators.

The reliability of a test may be defined as the degree of consistency with which a measuring device may be applied. In physical or motor measurement, the common practice is to repeat the full test with the same subjects under the same conditions and to correlate the results of the two tests. Thus, test accuracy is expressed in terms of coefficients of correlation, known as *reliability coefficients*. For the better tests, reliability coefficients of .90 and above will be found.

For written tests, the test-retest method is not considered satisfactory, owing to the fear that significant learning takes place between tests as a consequence of the first test. Thus, other methods have been utilized to determine their accuracy, including: (1) When two equivalent forms of the written test have been constructed, both forms are administered to the same subjects, and their scores on the two tests are correlated. (2) When only one form of the test is available, a coefficient of correlation is computed between scores which the same subjects made on the odd- and even-numbered questions of the test. In the latter method, however, the resulting correlation is for one-half of the test, which tends to lower the amount; by use of the Brown-Spearman prophecy formula, however, the correlation can be corrected for the full length of the test.

Objectivity, as a concept, has different meanings. The common term *objective tests* usually refers to written examinations scored from a key, as for true-false and multiple-choice questions. In test construction, however, objectivity means the degree of uniformity with which various individuals score the same tests. A slightly different concept of the

human values amenable to improvement through physical education activities and methods. It is well for the teacher to know the level of physical fitness, social adjustment, and emotional stability of her boys and girls, so that she can take steps to meet the individual needs thus disclosed. The proper selection of activities alone is not enough to achieve any educational objective; activity has real meaning only in respect to the way it is presented, in the method utilized.

2. *To determine the status of boys and girls in relation to basic body traits which affect physical performances.* Certain body traits impose limitations or provide advantages to boys and girls in physical education participation. Among these are the children's relative maturity, physique type, and body size; the significance of these traits was discussed in Chapter 2. Through testing or other forms of evaluation, the classroom teacher would do well to recognize these differences and make allowances for them in physical education work.

3. *To classify pupils according to their abilities in physical activities.* While it may be contended that heterogeneous instructional units have some value, homogeneous grouping according to pupils' abilities in physical education, where each individual's performance specifically and immediately affects the performances of others, has distinct advantages. These advantages are at least three in number: (1) Pedagogical, as instruction can be directed toward the general level of pupils' abilities. (2) Desirable pupil attitudes, as more immediate and lasting interest in physical education results when pupils can be successful a fair share of the time—a logical consequence of ability groupings. (3) Social development, as players are more active, cooperation is essential, and initiative and resourcefulness are necessary, when competing individuals and teams are evenly matched.

4. *To measure the results of instruction in physical and motor skills activities.* An obvious purpose of examinations and tests generally is to determine the progress made by individual pupils as a consequence of teaching. Physical education is no exception; it differs only in the type of progress evaluated. Thus, the teacher will want to know how much her pupils have improved as a result of the physical education activities taught, and she will want to identify those who are not progressing so that they can be given some individual attention in much the same manner as the slow reader is helped.

AVAILABILITY OF PHYSICAL EDUCATION TESTS

In some instances, the elementary school classroom teacher may wish to devise her own instruments or to select from individual test items at

as a normal distribution of test scores rarely extends beyond three standard deviations either side of the mean, this scale usually starts around 15 and ends about 85.

6-SIGMA SCALE. The 6-sigma scale has been used in physical education, especially for the extensive scales developed by Cozens and his associates. The scale starts at three standard deviations below the mean and goes for the same distance above the mean. Owing to these limitations, all of this scale is used in practice, although occasionally scores will fall outside the scale, that is, below 0 or above 100.

DOUBLE-ENTRY TABLES. At times, norms may be based upon various combinations of age, height, weight, and, less frequently, other body measures. A common illustration is found in the weight tables based upon age and height for each sex; these tables are used to determine the percentage underweight or overweight for boys and girls. The Rogers Strength Index, primarily a test of muscular strength and muscular endurance, has norms based on age and weight, again separately for boys and girls.

In the construction of norms, the originators of tests base them on the actual testing of subjects from the population for which the test is intended (that is, fifth-grade boys or second-grade girls). Properly, this sample should be large and should be an unbiased, or representative, selection.

It should be understood that, while norms are extremely important for interpreting the individual results from testing, they actually reflect the present level of achievement. Quite possibly, this level may be too low as contrasted with a desirable level; teachers should not necessarily be interested only in maintaining the *status quo*, but should strive to improve it. For example, evidence today shows that our youth generally are physically unfit. Physical fitness norms, therefore, based upon the present status of our children would not be sensible goals toward which to strive over a period of time.

NEED FOR PHYSICAL EDUCATION TESTS

The only justification of a testing program of any kind in the schools is that it improves teaching effectiveness. Through measurement, the teacher should be able to serve pupils better than would otherwise be possible. Of course, testing does not take the place of teaching; however, it can make teaching more definite and can insure a more orderly teaching process. Four specific purposes which may be achieved through physical education testing follow.

1. *To determine the status of boys and girls in relation to fundamental*

and enter adolescence earlier than those who have retarded dental development.

Dental age can be obtained by counting the number of permanent teeth erupted at any age and relating this number to standard figures for each age. These teeth erupt from about 6 to 13 years, which covers the elementary school span. As adapted from Shuttleworth,² the average number of permanent teeth erupted at each age is given in Table 11.1. A tooth is considered to have erupted upon the first appearance of the crown or a part of it through the gum.

TABLE 11.1
*Normal Number of Permanent Teeth Erupted **

<i>Dental Age</i>	<i>Boys</i>	<i>Girls</i>
6	2-3	2-3
7	6	7
8	9	10
9	12	13
10	15	17
11	19	21
12	23	25
13	26	27

* Refer to footnote 2, this chapter

After counting the number of permanent teeth that have erupted, the chronological age for this number is obtained from Table 11.1, which thus becomes the child's dental age. For example, if a boy has 12 erupted teeth, his dental age is nine years. If his chronological age is also nine years, his maturity level is normal. However, if his chronological age is eight years, he is advanced one year in maturation; if his chronological age is ten years, then he is retarded by one year. Interpolations between points on the scale, of course, will be necessary unless maturation determinations are made on or near birthdays.

Degutis' Maturity Exponent

Degutis³ has made a simple proposal for a maturity level exponent which utilizes age, height, and weight. He maintains that these measures are related to physiological maturity, based on the contention that

² Frank K. Shuttleworth, "The Physical and Mental Growth of Girls and Boys Ages Six to Nineteen in Relation to Age at Maximal Growth," *Monographs of the Society for Research in Child Development*, Vol. 4, No. 3 (Serial No. 22), 1939.

³ Ernest W. Degutis, Department of Physical Education, Colorado State College, Greeley, Colo.

time, during which adjustments of the circulatory-respiratory systems are necessary; distance running is an example. Underlying all physical fitness is a body free of disease and organic drains.

In motor fitness, the physical fitness components are included; however, such components as muscular power, agility, speed, body balance, and the like, are added. *Muscular power* is the ability to release maximum force in the shortest time; standing broad jump is an example. *Agility* is speed in changing body positions or in changing direction; a dodging run is an example. *Speed* is the rapidity with which successive movements of the same kind can be performed; the 50-yard dash is an example. *Body balance* is the ease in maintaining a body position; standing on one's head is an example. Components other than those identified here are sometimes included under the broad concept of motor fitness, as will be noted among the tests described below.

Muscular Fitness Tests

An excellent muscular fitness test was constructed by Frederick Rand Rogers in which a Physical Fitness Index was obtained. This battery contains four strength tests (right and left grips, back and leg lifts), two muscular endurance tests (push-ups, pull-ups), and lung capacity. The Physical Fitness Index is derived from norms based upon sex, age, and weight; norms are available beginning at eight years. The total score on this test, known as the Strength Index, also has value in physical education as a general motor ability test. In order to give the Physical Fitness Index test, however, special testing instruments are required and considerable testing skill is necessary for proper results. For those classroom teachers who may be interested in this test, its full description may be found in Clarke's measurement text.⁴

Clarke and Schopf⁵ have also constructed a test for boys in grades four, five, and six which is based entirely on strength items. (As for the Rogers test above, norms are based upon age and weight.)

Kraus-Weber Test

The Kraus-Weber (K-W) Test of Minimum Muscular Fitness may be used by the classroom teacher for both boys and girls. This test was developed by Kraus from his clinical practice in physical medicine and rehabilitation. The test consists of six items, which indicate, according to the originators, the level of muscular strength and body flexibility

⁴ Clarke, *op. cit.*, chap. 8.

⁵ H. Harrison Clarke and Theodore Schopf, "Construction of a Muscular Strength Test for Boys in Grades Four, Five, and Six," *Research Quarterly*, Vol. 33, No. 4 (December 1962).

children who are tall and heavy generally are more mature than those children of the same age who are shorter and lighter.

A maturity level raw score is obtained by adding each of the following: (1) one point for each month of age, (2) one point for each pound of weight, and (3) two points for each inch of height. This maturity level raw score is converted to a maturity level exponent according to the following scheme:

Maturity Level		Maturity Level	
Exponent	Raw Score	Exponent	Raw Score
1	164 and below	6	265-289
2	165-189	7	290-314
3	190-214	8	315-339
4	215-239	9	340 and above
5	240-264		

The maturity level exponent is then related to the child's age and grade, as indicated in the following chart:

Grade	Age (Years)	Maturity Exponent		
		Large	Average	Small
1	5-6	4	3	2
2	6-7	5	4	3
3	8-9	6	5	4
4	9-10	7	6	5
5	10-11	8	7	6
6	11-12	9	8	7

To illustrate: A maturity level raw score of 275 for a boy in the fourth grade (exponent 6) describes the boy as average in size. The same score for a third-grade boy indicates that the boy is large in size.

PHYSICAL AND MOTOR FITNESS

Two fitness terms have become quite prevalent in physical education; these are *physical fitness* and *motor fitness*. Perhaps these can best be understood in terms of basic components. In this text, the components of physical fitness are proposed as muscular strength, muscular endurance, and circulatory endurance. *Muscular strength* is the maximum strength applied in a single muscular contraction; grip strength is an example. *Muscular endurance* is the ability to continue muscular exertions of submaximal loads; chinning the bar is an example (except for those who cannot chin the bar). *Circulatory endurance* involves moderate contractions of large muscle groups for relatively long periods of

the psoas muscle is so shortened that it cannot pull in the movement. From the same position as for the abdominal-plus test, except that the knees are bent with the heels close to the buttocks, one sit-up is performed in order to pass the test.

PSOAS AND LOWER ABDOMINALS (Fig. 11.1C). The strength and endurance of the psoas and lower abdominal muscles are tested. The subject lies on his back, hands clasped behind his neck, the legs are straight. This test is passed if the straight legs can be held with the heels 10 inches off the table for 10 seconds.

UPPER BACK (Fig. 11.1D). The strength and endurance of the upper back muscles are tested. The subject lies on his stomach with a pillow or folded blanket under the hips and lower abdomen, hands clasped behind his neck; the examiner holds the feet down. This test is passed if the head, shoulders, and chest are raised and held without touching the table for 10 seconds.

LOWER BACK (Fig. 11.1E). The strength and endurance of the lower back muscles are tested. The subject is in the same position as for the upper-back test, except that the examiner holds the chest down. This test is passed if the legs are raised off the table, with knees straight, and held for 10 seconds.

LENGTH OF BACK AND HAMSTRING MUSCLES (Fig. 11.1F). Frequently called a "flexibility" test, the length of the back and hamstring (large muscles in back of thigh) muscles is tested. The subject stands erect in stocking or bare feet, hands at his side, feet together. The test is passed if the subject can lean down slowly and touch the floor with the fingertips and hold this position for three seconds without bending the knees. The examiner should hold the knees of the person being tested in order to detect any slight bend if it should occur.

Classroom teachers using the K-W tests may wish to know the expe-

FIG. 11.1 (cont.)



(D) Upper Back



(E) Lower Back



(F) Length of Back and Hamstring Muscles

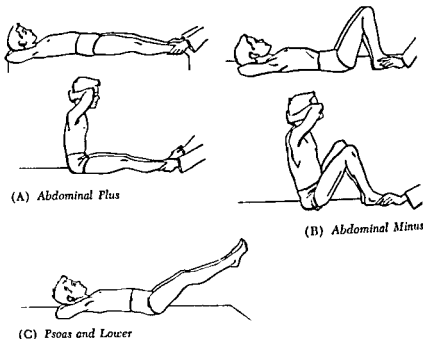


FIG. 11.1 *Kraus-Weber Test of Minimum Muscular Fitness*

below which functioning of the whole body is endangered.

As the name of the test implies, minimum fitness levels only are being evaluated. Certainly, classroom teachers should give individual attention to the fitness improvement of boys and girls who fail one or more of these test items. However, because of their minimal nature, it should not be assumed that those passing all K-W tests possess adequate fitness. These tests should be supplemented or replaced by tests which extend through all levels of fitness as soon as time and resources permit.

As described below, the six K-W tests are graded on a pass-or-fail basis, although the authors provide a means for scoring partial movements from 1 to 10. Descriptions of these tests follow.* These tests are easiest to give on a table which will accommodate the tallest subject when reclining.

ABDOMINAL PLUS (Fig. 11.1A). The strength of the abdominal and psoas muscles is tested (the psoas muscle runs from inside the thigh to the lower spine). The subject lies on his back, hands clasped behind his neck; the examiner holds the feet down. The performance of one sit-up from this position passes the test.

ABDOMINAL MINUS (Fig. 11.1B). The strength of the abdominal muscles without the help of the psoas is tested; by bending the knees,

*Hans Kraus and Ruth P. Hirschland, "Minimum Muscular Fitness Tests in School Children," *Research Quarterly*, 25, No. 2 (May 1954), 178.

the psoas muscle is so shortened that it cannot pull in the movement. From the same position as for the abdominal-plus test, except that the knees are bent with the heels close to the buttocks, one sit-up is performed in order to pass the test.

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FIG. 11.1 (cont.)



(D) Upper Back



(E) Lower Back



(F) Length of Back and Hamstring Muscles

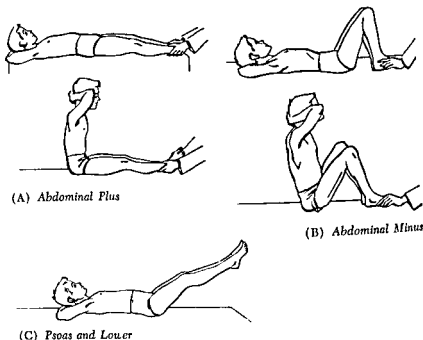


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⁶ Hans Kraus and Ruth P. Hirschland, "Minimum Muscular Fitness Tests in School Children," *Research Quarterly*, 25, No. 2 (May 1954), 178.

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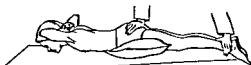
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Classroom teachers using the K-W tests may wish to know the expe-

FIG. 11.1 (cont.)



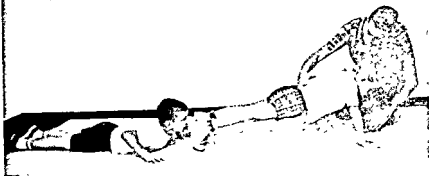
(D) Upper Back



(E) Lower Back



(F) Length of Back and Hamstring Muscles



(A) *Push-ups*



(B) *Standing Broad Jump*



(C) *Knee-touch Sit-ups*

periences which others have had with it. In general, the following characterize these experiences: (1) The flexibility test has produced by far the greatest number of failures; nearly twice as many boys as girls fail this test. (2) For the abdominal-minus test, the opposite has been the case; that is, about twice as many girls as boys fail. (3) Very few children fail the two back tests. (4) Girls have had a lower failure rate than boys on the entire K-W test, but this is due to their much lower failure rate on the flexibility test. (5) For both sexes, there is a definite decrease in strength failures as children become older; the opposite is the case for the flexibility test. (6) The percentage of K-W failures is much lower in schools where strong physical education programs exist. Furthermore, participation in vigorous body-building activities will rapidly reduce the failure rate in any school.

Oregon Motor Fitness Test

Most of the motor fitness tests constructed for use in elementary school physical education are limited to boys and girls in grades four, five, and six. A number of such tests are available. For this book, the Oregon Motor Fitness Test is described for these grades, as it contains a minimum number of test items which can be given by the classroom teacher.

In the construction of the Oregon Motor Fitness Test, the components to be included and potentially useful test items for each component were proposed by a statewide committee. The components selected for the battery were arm and shoulder-girdle strength and endurance, abdominal strength and endurance, muscular power, running speed and endurance, agility, and trunk flexibility. From a total of 12 test items reflecting these elements, three tests were selected separately for boys and girls by correlational methods. T-scale scoring charts were constructed based upon a large sample of Oregon children.

BOYS' TEST. The three Oregon motor fitness test items were push-ups, standing broad jump, and knee-touch sit-ups. Directions for giving these tests follow.¹

1. *Push-ups* (Fig. 11.2A). The boy takes a front-leaning rest position with the body supported on hands and balls of feet; the arms are straight and at right angles to the body. The test consists of lowering the body so that the chest touches or nearly touches the floor, then pushing the body back to the starting position by straightening the arms; this process is continued as many times as possible. In performing push-ups, only the chest should touch the floor; the arms must be completely extended with each push-up; the body must be held straight throughout. Scoring consists of the number of correct push-ups.

¹ For further information about the Oregon Motor Fitness Test, address Supervisor of Physical Education, State Education Department, Salem, Oregon.



(A) *Hanging in Arm-flexed Position*



(B) *Crossed-arm Curl-ups*

FIG. 11.3 *Girls' Oregon Motor Fitness Tests*

2. *Standing broad jump* (Fig. 11.2B). A take-off line is drawn on the floor, ground, or mat. At a distance all can jump, but an even number of feet, a second line is drawn; additional parallel lines two inches apart are drawn to a point exceeding the farthest jump anticipated. The boy takes a position with the toes just touching the take-off line, feet slightly apart. Taking off from both feet simultaneously, the pupil jumps as far as he can, landing on both feet, in jumping, he crouches slightly and swings the arms to aid the jump. Scoring is the distance, to the nearest inch, from the take-off line to the closest heel position; if the pupil falls back, he should retake the test. The best of three trials is recorded.

3. *Knee-touch sit-ups* (Fig. 11.2C). The boy lies on his back knees straight, feet approximately 12 inches apart, with hands clasped behind his head; a scorer kneels on the floor and holds the soles of the feet against his knees, pressing firmly. The pupil performs the following movement as many times as possible: (a) raise the trunk, rotating it somewhat to the right, and bend forward far enough to touch the right elbow to the left knee; (b) lower the trunk to the floor; (c) sit up again, but rotate the trunk to the left and touch the left elbow to the right knee; (d) again, lower the trunk to the floor. The knees may be slightly bent as the boy sits up. However, he must not pause during the test, and bouncing from the floor is not permissible. In scoring, one point is given for each complete movement of touching elbow to knee.

GIRLS' TEST. The three tests in the Oregon Motor Fitness Test for girls are: hanging in arm-flexed position, standing broad jump and crossed-arm curl-ups.

1. *Hanging in arm-flexed position* (Fig. 11.3A). The girl stands on a stool or other support, placing the hands shoulder-width apart, palms outward, on a one-inch chinning bar; elbows should be flexed to permit chin to be level with the bar. In testing, the support is removed and the pupil holds her chin to the level of the bar as long as possible; the legs should remain extended throughout. The score is the number of seconds some flexion can be maintained in the elbow joints.

2. *Standing broad jump*. This test for girls is given in the same manner as for boys.

3. *Crossed-arm curl-ups* (Fig. 11.3B). The girl takes a lying position on her back with knees bent at a right angle, soles of the feet flat on the floor, hip-width apart, and arms folded and held against the chest; the feet should be held down firmly by a partner. The test consists of raising the trunk to a sitting position and returning to a lying position as many times as possible without stopping or pausing. The feet must remain on the floor throughout the test; the elbows must be kept down, the arms should not be used to help the body up; and bouncing from the floor is improper. The score is the number of correct curl-ups performed.

TABLE 11.3
Scoring Table
Oregon Motor Fitness Test
for Elementary School Girls, Grades 4, 5, and 6

Std. Pts. Based on T-Score	Arm-flexed Hang in Seconds			Standing Broad Jump in Inches			Number of Crossed-arm Curl-ups		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
100	69	65	77	91	104	102	130	132	135
96	64	61	72	87	101	99	122	124	127
92	59	57	67	84	97	95	114	116	119
88	54	53	62	81	93	91	106	108	111
84	50	48	57	78	90	88	98	100	103
80	45	44	52	74	86	84	90	92	95
76	40	40	47	71	82	80	82	84	87
72	35	36	42	68	79	77	74	76	79
68	30	31	37	65	75	73	66	68	71
64	25	27	32	62	71	69	58	60	63
60	20	23	27	58	68	66	50	52	55
56	15	19	22	55	64	62	42	44	47
52	10	14	17	52	61	59	34	36	39
48	5	10	12	49	57	55	26	28	31
44	1	6	7	45	53	51	18	20	23
40		2	1	42	50	48	10	12	15
36				39	46	44	2	4	8
32				36	42	40			1
28				33	39	37			
24				29	35	33			
20				26	31	29			
16				23	28	26			
12				20	24	22			
8				17	20	18			
4				14	17	15			
1				11	14	12			

Motor Fitness Test Norms for Girls, Grades 4, 5, and 6

Classification	Superior	Good	Fair	Poor	Inferior	Grade
Hanging in Arm-flexed Position	45-Up	30- 44	15- 29	1- 14	0	4
Standing Broad Jump	65-Up	55- 64	49- 54	38- 48	0- 37	
Crossed-arm Curl-up	90-Up	66- 89	34- 65	10- 33	0- 9	
Hanging in Arm-flexed Position	44-Up	31- 43	19- 30	6- 18	0- 5	5
Standing Broad Jump	70-Up	64- 69	55- 63	44- 54	0- 43	
Crossed-arm Curl-up	92-Up	68- 91	36- 67	12- 35	0- 11	
Hanging in Arm-flexed Position	52-Up	37- 51	22- 36	7- 21	0- 6	6
Standing Broad Jump	73-Up	62- 72	55- 61	44- 54	0- 43	
Crossed-arm Curl-up	95-Up	71- 94	39- 70	15- 38	0- 14	
TOTAL POINTS	198-Up	168-197	138-167	115-137	114-Down	

TABLE 11.2
Scoring Table
Oregon Motor Fitness Test
for Elementary School Boys, Grades 4, 5, and 6

Std. Pts Based on T-Score	Standing Broad Jump in Inches			Number of Push-ups			Number of Sit-ups		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
100	97	100	106	55	47	49	131	141	155
96	93	97	102	51	43	45	123	132	145
92	90	94	98	48	40	42	114	123	135
88	86	90	94	44	37	39	106	114	125
84	83	87	91	40	34	36	97	105	115
80	79	83	87	36	31	33	89	96	105
76	76	80	84	33	28	30	81	87	95
72	73	77	81	29	25	27	72	79	85
68	69	73	77	25	22	24	64	70	75
64	66	70	74	22	19	21	55	61	65
60	62	66	70	18	16	18	47	52	55
56	59	63	66	14	13	15	39	43	45
52	56	60	63	10	10	12	30	33	35
48	52	56	59	7	7	9	22	22	25
44	49	53	56	3	4	6	13	12	15
40	45	49	52	1	1	4	5	2	5
36	42	46	49			1	1		1
32	39	43	46						
28	35	39	42						
24	32	36	39						
20	28	32	35						
16	25	29	31						
12	22	26	28						
8	18	22	24						
4	15	19	21						
1	12	16	18						

Motor Fitness Test Norms for Boys, Grades 4, 5, and 6

Classification	Superior	Good	Fair	Poor	Inferior	Grade
Standing Broad Jump	67-Up	62- 66	52- 61	43- 51	12- 42	4
Push-ups	36-Up	25- 35	10- 24	3- 9	0- 2	
Sit-ups	90-Up	65- 89	30- 64	5- 25	0- 4	
TOTAL POINTS	205-Up	190-204	140-189	120-139	0-119	
Standing Broad Jump	71-Up	66- 70	56- 65	47- 55	16- 46	5
Push-ups	34-Up	24- 33	10- 23	4- 6	0- 3	
Sit-ups	95-Up	70- 94	33- 69	5- 32	0- 4	
TOTAL POINTS	207-Up	192-206	142-191	122-141	0-121	
Standing Broad Jump	75-Up	70- 74	59- 69	50- 59	18- 49	6
Push-ups	33-Up	24- 32	12- 23	6- 11	0- 5	
Sit-ups	105-Up	75-104	35- 74	5- 34	0- 4	
TOTAL POINTS	205-Up	195-204	145-194	125-144	0-124	

A copy of the Oregon Motor Fitness Test score card for boys appears in Fig. 11.4; the same score card may be used for girls by substituting the names of the girls' tests. The scoring table and norm classifications for boys and girls are given in Tables 11.2 and 11.3, respectively.

PCPF Screening Test

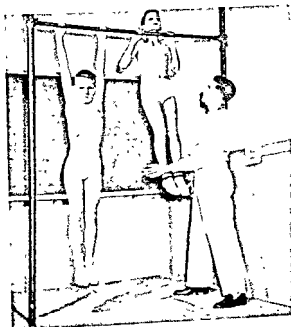
The President's Council on Physical Fitness⁸ has proposed three simple screening tests to identify boys and girls age ten years and above who should be considered underdeveloped. These tests and the techniques of their administration follow.

PULL-UPS FOR BOYS (Fig. 11.5A). Grasp a chinning bar with palms forward; hang with arms and legs fully extended, feet free of the floor. The test consists of pulling body up with arms until the chin is placed over the bar; lower the body until the elbows are fully extended. Snap movements, swinging, or kicking the legs are not permitted.

MODIFIED FULL-UPS FOR GIRLS (Fig. 11.5B). The height of the chinning bar should be adjusted to the chest level of each girl (a satisfactory

⁸*Youth Physical Fitness: Suggested Elements of a School-Centered Program* Washington, D.C.: U.S. Government Printing Office, 1961, p. 19.

FIG. 11.5 Screening Tests: President's Council on Physical Fitness



(A) Pull-ups for Boys

A copy of the Oregon Motor Fitness Test score card for boys appears in Fig. 11.4; the same score card may be used for girls by substituting the names of the girls' tests. The scoring table and norm classifications for boys and girls are given in Tables 11.2 and 11.3, respectively.

PCPF Screening Test

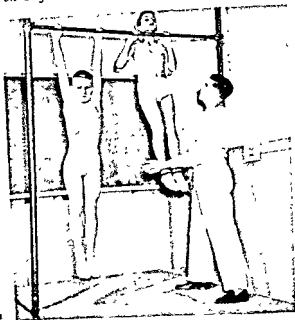
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FIG. 11.5 Screening Tests: President's Council on Physical Fitness



(A) Pull-ups for Boys

OREGON MOTOR FITNESS TEST SCORE CARD--BOYS GRADES 4, 5, AND 6

TABLE

COUNTY

[illegible]

DIRECTIONS FOR RECORDING AND SCORING TESTS

- Record the actual test score for each item in the column marked "Test Score" on front side of score card
- Find standard point score corresponding to each actual test score in the "Scoring Table" on the back of the card and record in column marked "Standard Points"
- Sum up "Standard Points" for all test items and record total at bottom of card in space under points column
- Check norms on the card and rate student by grade as superior, good, fair poor or inferior on each test performance score and on total fitness score.
- At the end of the semester or term repeat tests for the second measurement Repeat above procedure In addition, find difference between the two measurements for each test item At the end of the year find difference between second and final tests Record this difference in improvement column with a plus or minus, as the case may be, as an index of development

03-1-51

FIG. 11.4

A copy of the Oregon Motor Fitness Test score card for boys appears in Fig. 11.4; the same score card may be used for girls by substituting the names of the girls' tests. The scoring table and norm classifications for boys and girls are given in Tables 11.2 and 11.3, respectively.

PCPF Screening Test

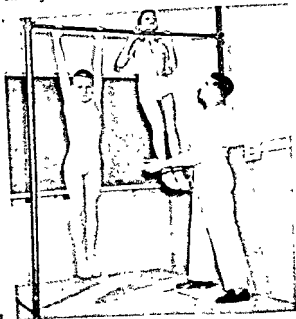
The President's Council on Physical Fitness^{*} has proposed three simple screening tests to identify boys and girls age ten years and above who should be considered underdeveloped. These tests and the techniques of their administration follow.

PULL-UPS FOR BOYS (Fig. 11.5A). Grasp a chinning bar with palms forward; hang with arms and legs fully extended, feet free of the floor. The test consists of pulling body up with arms until the chin is placed over the bar; lower the body until the elbows are fully extended. Snap movements, swinging, or kicking the legs are not permitted.

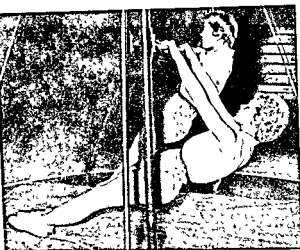
MODIFIED PULL-UPS FOR GIRLS (Fig. 11.5B). The height of the chinning bar should be adjusted to the chest level of each girl (a satisfactory

^{*}*Youth Physical Fitness: Suggested Elements of a School-Centered Program.* Washington, D.C.: U.S. Government Printing Office, 1961, p. 19.

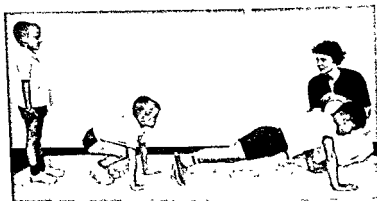
FIG. 11.5 Screening Tests: President's Council on Physical Fitness



(A) Pull-ups for Boys



(B) *Modified Pull-ups
for Girls*



(C) *Squat Thrusts for Boys and Girls*

FIG. 11.5 (cont.)

landmark is the apex of the sternum). Grasp bar with palms facing out; extend legs under bar until body and arms form a right angle when the body and knees are straight, heels on the floor. A partner braces the pupil's heels to prevent slipping. The test consists of pulling the body with the arms until the chest touches the bar; lower the body until the elbows are fully extended. In performing this test, the body must be kept straight throughout; no resting is permitted.

SIT-UPS FOR BOYS AND GIRLS. This test is performed in the same manner as "knee-touch sit-ups" in the boys' Oregon Motor Fitness Test.

SQUAT THRUST FOR BOYS AND GIRLS (Fig. 11.5C). The pupil stands at attention. The test consists of performing the following four-part movement as rapidly as possible in 10 seconds: (1) Bend knees and place hands on floor in front of feet (squat position). Arms may be between,

outside, or in front of bent knees. (2) Thrust legs back far enough so that body is perfectly straight from shoulders to feet. (3) Return to squat position. (4) Return to position of attention.

The following minimal standards were adopted for passing the test by boys and girls ten years and older:

<i>Tests</i>	<i>Sex</i>	<i>Age</i>	<i>Minimal Number</i>
Pull-ups	Boys	10-13	1
Modified Pull-ups	Girls	10-17	8
Sit-ups	Boys	10-17	14
	Girls	10-17	10
Squat Thrusts	Boys	10-17	4
	Girls	10-17	3

Other Motor Fitness Tests

A number of other motor fitness tests exist for elementary school boys and girls; some of these have been developed by states or local communities, and others by organizations or associations. Several of these will be listed here, together with the sources from which they may be obtained.

AAHPER YOUTH FITNESS TEST. Under the chairmanship of Paul A. Hunsicker, a committee of the American Association for Health, Physical Education, and Recreation selected the following items for this test battery: pull-ups, sit-ups, 40-yard shuttle run, standing broad jump, 50-yard dash, softball throw for distance, and 600-yard run-walk. Norms are based both on age and the Neilson Cozens age-weight-height classification scheme for boys and girls separately in grades five through college. *Source:* American Association for Health, Physical Education, and Recreation, 1201 Sixteenth Street, N.W., Washington, D.C.

WASHINGTON MOTOR FITNESS TEST. Under the direction of Glenn Kirchner, an elementary school motor fitness test was constructed for boys and girls 6 to 12 years of age in the state of Washington. This is one of the very few tests which include the primary school level. Five test items are included, to be given in the following order: standing broad jump, bench push-ups, curl-ups, squat jumps, and 30-yard dash. T-scale norms are available for each sex at each age. *Source:* Dr. Glenn Kirchner, "Elementary School Physical Fitness Test," Eastern Washington State College, Cheney, Washington.

CALIFORNIA PHYSICAL PERFORMANCE TEST. This motor-fitness battery involves the use of five groups of tests, as follows: power of the legs, muscular strength and endurance of the arms and shoulder girdles, abdominal strength and endurance, running speed, and agility. Beginning at ten years of age, norms are based on percentile scores for boys and girls separately at each age (1962 revision). *Source:* Bureau of

Health Education, Physical Education, and Recreation, California State Department of Education, Sacramento, California.

INDIANA MOTOR FITNESS TEST. In addition to secondary school and college youth, the Indiana Motor Fitness Test has been constructed for elementary school boys and girls beginning with the fourth grade. The test items consist of straddle chins, squat thrusts for 20 seconds, push-ups, and vertical jump. Norms are based on McCloy's *Classification Index* for this age level. *Source:* C. C. Franklin and N. G. Lehsten, "Indiana Physical Tests for the Elementary Level (Grades 4 to 8)," *Physical Educator*, V, No. 3 (May 1948), 38-45. (Also, see page 231, Clarke's measurement text, footnote 1, this chapter.)

NEW YORK STATE PHYSICAL FITNESS TEST. The New York State battery contains the elements of posture, accuracy, strength, speed, balance, and endurance for boys and girls in grades four through twelve. *Source:* Physical Education Bureau, State Education Department, Albany, N. Y.

TULSA ELEMENTARY PHYSICAL FITNESS TEST. Percentile norms for various California classification categories have been prepared by the Tulsa, Oklahoma, Public Schools for boys and girls in all elementary grades. The test items are 25- or 50-yard dashes, pull-ups, zigzag run, sit and reach, sit-ups, 300- or 600-yard run-walks, broad jump, softball throw for distance, and side step. *Source:* Mrs. Beatrice Lowe, Supervisor of Elementary Education, Public Schools, Tulsa, Okla.

AAU PHYSICAL FITNESS TESTS. The Amateur Athletic Union has prepared pass-or-fail standards for boys and girls on the following test items, upon which they award certificates of achievement: sprints, walk and run, sit-ups, pull-ups, standing broad jump, push-ups, baseball throw, continuous hike for distance, and running high jump. *Source:* Amateur Athletic Union, 233 Broadway, New York City.

Circulatory Fitness

The research in the construction of circulatory fitness tests has not produced as encouraging results as one might wish. Further, tests of this type at the elementary school level are particularly meager. In physical education, generally, two approaches have been made to the measurement of this fitness component. One method has involved testing running (or swimming) events requiring circulatory endurance. The other method tests the response of the circulatory and, in some instances, respiratory systems to prolonged exercise.

The run-walk test is administered in the following manner: At the signal "Ready? Go!" the subject starts, from a standing position, running the 300-yard or 600-yard distance, as the case may be. The running may be interspersed with walking, as the pupil may choose. It is possible to start several subjects at once by having the pupils pair off before the start of the test. While one of the pair is taking the test, the other listens for and remembers his partner's time as the latter crosses the finish line. Record times in minutes and seconds. While walking is permitted, the object is to cover the distance in the shortest possible time.

The norms for these tests are percentile scores for each of the Neilson and Cozens age, height, and weight classification categories. This classification scheme is described later in this chapter. The percentiles for the Tulsa 300-yard run-walk test for the first three grades are given in Table 11.4.

TABLE 11.4
Percentile Norms for 300-yard Run-walk *
Grades One, Two and Three

Percentile Scores	Classification Groups											
	A-B		C		D		E		F		G-H-I	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
99	1:02	1:02	1:01	1:02	:56	:55	:50	:53	:50	:53	:53	:49
95	1:11	1:11	1:07	1:08	1:02	1:04	:58	1:01	:56	:59	:58	:55
90	1:14	1:17	1:10	1:12	1:05	1:08	1:01	1:04	:59	1:04	1:01	1:01
85	1:17	1:20	1:13	1:15	1:08	1:10	1:05	1:07	1:01	1:07	1:02	1:05
80	1:20	1:22	1:16	1:17	1:10	1:11	1:06	1:08	1:04	1:09	1:04	1:08
75	1:23	1:23	1:17	1:19	1:13	1:14	1:08	1:10	1:05	1:11	1:07	1:11
70	1:24	1:25	1:19	1:20	1:14	1:16	1:10	1:13	1:07	1:13	1:08	1:13
65	1:25	1:27	1:20	1:22	1:16	1:18	1:11	1:14	1:08	1:14	1:10	1:16
60	1:26	1:28	1:22	1:24	1:17	1:20	1:13	1:16	1:10	1:17	1:13	1:17
55	1:28	1:29	1:23	1:25	1:19	1:22	1:14	1:17	1:11	1:19	1:14	1:19
50	1:29	1:31	1:25	1:26	1:20	1:23	1:16	1:19	1:12	1:20	1:16	1:22
45	1:30	1:32	1:26	1:28	1:22	1:25	1:17	1:21	1:13	1:22	1:19	1:23
40	1:31	1:35	1:28	1:29	1:23	1:27	1:19	1:23	1:16	1:23	1:20	1:25
35	1:32	1:37	1:29	1:31	1:26	1:29	1:20	1:26	1:17	1:26	1:23	1:28
30	1:35	1:39	1:31	1:34	1:28	1:32	1:22	1:28	1:19	1:28	1:26	1:30
25	1:38	1:43	1:32	1:37	1:29	1:35	1:25	1:31	1:22	1:31	1:28	1:32
20	1:41	1:49	1:36	1:40	1:33	1:38	1:28	1:34	1:25	1:34	1:34	1:35
15	1:44	1:55	1:40	1:44	1:40	1:44	1:33	1:40	1:28	1:37	1:40	1:40
10	1:52	2:02	1:46	1:50	1:47	1:54	1:40	1:46	1:38	1:44	1:46	1:49
5	2:03	2:12	1:55	2:02	2:01	2:08	1:50	1:58	1:49	1:54	2:01	1:58
1	2:31	3:07	2:32	2:41	2:32	2:38	2:23	2:37	2:13	2:17	2:34	2:24

* Courtesy of Mrs. Beatrice Lowe, Supervisor of Elementary Physical Education, Public Schools, Tulsa, Oklahoma.

GENERAL CLASSIFICATION

Historically under the designation of "general motor ability," tests have been proposed for classifying pupils into homogeneous groups for

Health Education, Physical Education, and Recreation, California State Department of Education, Sacramento, California.

INDIANA MOTOR FITNESS TEST. In addition to secondary school and college youth, the Indiana Motor Fitness Test has been constructed for elementary school boys and girls beginning with the fourth grade. The test items consist of straddle chins, squat thrusts for 20 seconds, push-ups, and vertical jump. Norms are based on McCloy's Classification Index for this age level. *Source:* C. C. Franklin and N. G. Lehsten, "Indiana Physical Tests for the Elementary Level (Grades 4 to 8)," *Physical Educator*, V, No. 3 (May 1948), 38-45 (Also, see page 231, Clarke's measurement text, footnote 1, this chapter.)

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Many of the motor fitness tests at all ages have used straight-out runs in the evaluation of circulatory fitness. However, these have not reached down to the first grade of elementary school, except very infrequently. One of these occasions was in the Tulsa test mentioned above, where the 300-yard run-walk was included for boys and girls in grades one, two, and three and the 600-yard run-walk was used for both sexes in grades four, five, and six.

participation in a wide range of physical education activities. Such tests do not measure skill in any particular sport or activity. Rather, an individual with a high score on such a test should perform well, or have potentialities for good performance after a period of instruction, in a number of activities. Thus, if these tests are to be used for physical education classification purposes, the classroom teacher may need to use *some judgment in placing pupils in various groups, being guided by her observations of their performances in physical activities.*

Since most of the classification tests are rather involved and complicated, only one of the simpler tests of this sort will be presented here. This test is the Neilson-Cozens (California) classification-exponent scheme.

When validated against various track and field and other athletic criteria, classification indices, as they are generally called, seem to reflect over-all ability reasonably well. These indices are based upon various combinations of age, height, and weight and can be used for both boys and girls. Inasmuch as the Neilson-Cozens chart is needed for scoring the run-walk tests described above, this classification scheme will be presented here. As the original Neilson-Cozens classification did not go be-

TABLE 11.5
*Neilson-Cozens Classification Chart
for Elementary School Boys and Girls **

Exponent	Height	Age	Weight	Sum	Class
1		5-6 to 5-11	16- 20	9 and below	A
2	42-43	6-0 to 6- 5	21- 25	10-14	B
3		6-6 to 6-11	26- 30	15-19	C
4	44-45	7-0 to 7- 5	31- 35	20-24	D
5		7-6 to 7-11	36- 40	25-29	E
6	46-47	8-0 to 8- 5	41- 45	30-34	F
7		8-6 to 8-11	46- 50	35-39	G
8	48-49	9-0 to 9- 5	51- 55	40-44	H
9		9-6 to 9-11	56- 60	45-49	I
10	50-51	10-0 to 10- 5	61- 65	50-54	J
11	52-53	10-6 to 10-11	66- 70	55-59	K
12		11-0 to 11- 5	71- 75		
13	54-55	11-6 to 11-11	76- 80		
14		12-0 to 12- 5	81- 85		
15	56-57	12-6 to 12-11	86- 90		
16		13-0 to 13- 5	91- 95		
17	58-59	13-6 to 13-11	96-100		
18			101-105		
19	60 and over		106 and over		

* Acknowledgments to N. P. Neilson and the Department of Physical Education, Tulsa, Oklahoma, Public Schools.

low 10 years of age, Neilson⁹ extended it down to six years for use with the Tulsa Elementary Physical Fitness Test. This chart appears in Table 11.5.

The following example will show how the chart is used. A pupil is 44 inches in height, 7 years 6 months of age, and weighs 40 pounds. From the chart:

<i>Factor</i>	<i>Exponent</i>
Height: 44	4
Age: 7-6	5
Weight: 40	5
Sum of Exponents	14
Classification	B

This pupil should participate, as far as these norms are concerned, with boys and girls of the same classification; if necessary, because of small numbers in a given elementary classroom, adjacent classifications may be combined.

PHYSICAL EDUCATION SKILLS

The ability to test and score the various physical education motor skills of elementary school boys and girls is an obvious advantage, as such skills compose the "subject-matter" content of physical education. The number and variety of such tests at the elementary school level are most meager. However, two investigators have recently published tests of this type, which will be described below.

Johnson's Fundamental Skills Test

Johnson¹⁰ developed tests for fundamental skills of children, both boys and girls, in grades one through six. The skills tested were throwing, catching, kicking, batting, jumping, and running. Five tests were proposed; these are described below, with the exception of the batting test, which is omitted because of the need for special equipment.

KICKING TEST. *Markings:* On a flat wall, mark with one-half-inch tape a target area 5 feet high and 10 feet wide; divide this area into five equal rectangles placed perpendicular to the floor. Tape figures in these rectangles as follows: 5, center panel; 3, two panels adjacent to the center; 1, two outer panels. On the floor (or ground), three lines 3 feet long are marked: 10 feet, 20 feet, and 30 feet from the wall. *Performance:* Subject

⁹ N. P. Neilson, Director, Department of Physical Education, University of Utah, Salt Lake City, Utah.

¹⁰ Robert D. Johnson, "Measurement of Achievement in Fundamental Skills of Elementary School Children," *Research Quarterly*, 33, No. 1 (March 1962), 94.

places soccer ball behind the 10-foot line and kicks the ball at the wall target. Three kicks are made from each of the lines. Two practice kicks are permitted at each line before the three kicks on the test are made. *Scoring:* Total number of points indicated on the target area into which the ball is kicked. If the ball hits on the line between two areas, the score is that for the area with the largest number. A ball kicked from in front of the restraining floor line is not counted, and another trial is given.

PASS-AND-CATCH TEST. *Markings:* On a flat wall, place a 3-foot square with one-half-inch tape; the bottom line is 4 feet from the floor. An inner square, 10 inches in from all four sides, is placed on the wall. Starting 3 feet from the wall, and in line with the wall target, place five 2-foot squares, each 1 foot behind the other. *Performance:* With both feet inside the first square, the subject throws a ball ($8\frac{1}{2}$ -inch playground ball for grades 1 to 3, and a regulation volleyball for grades 4 to 6) underhand at the wall target, keeping both feet inside the square, he attempts to catch the ball in the air when it rebounds from the wall. After two practice trials, three trials are made from each of the five squares. *Scoring:* Two points for hitting the inner wall target when throwing; two points for catching the rebounding ball in the air while standing in the floor square; one point for throwing the ball in or on the outer wall-target square; one point for catching the rebounding ball in the air, on or outside the floor square. If the subject steps out of the square when throwing, the throw is nullified and another trial is given.

JUMP-AND-REACH TEST. *Markings:* Horizontal lines one-half inch apart are drawn on a long piece of construction paper. This paper is fastened to the wall at such a height that the 0 line on the chart is just below the point that represents the standing reach of the shortest performer. On each margin, number the whole inches. *Performance:* The subject stands with one side of his body parallel with the wall chart. He dips his forefinger in chalk dust supplied in a conveniently located container, and makes a mark on the chart which represents the highest point he can reach while keeping both feet flat on the floor. From a crouch position (no preliminary steps permitted), he then jumps upward as far as possible and makes a mark on the wall at the peak of the jump. *Scoring:* The score is the inches (to the nearest half-inch) between the two chalk marks. Five jumps are allowed, with the highest jump recorded as the score.

ZIGZAG TEST. *Markings:* Four folding chairs are placed 6 feet apart on the floor, between a starting line and an "X" placed on the wall; the distance is also 6 feet between the starting line and the first chair and between the last chair and the wall. The "X," 6 inches in size, is 4 feet from the floor. The length of the starting line is 1 foot. There should be

20 feet behind the starting line free from obstructions. *Performance:* From a standing position behind the starting line, on the command, "Go," the subject runs to either right or left of the first chair, zigzags around the remaining chairs, touches the "X" on the wall, and returns in the same manner to touch the starting line with his foot. *Scoring:* Time is taken with a stop watch to the nearest tenth of a second; three trials are given, with the shortest time being recorded. For any of the following fouls, the subject is required to run the course again, any part of the forward foot over the starting line when the "Go" is given; not zigzagging around the chairs in the prescribed manner, not touching the "X" on the wall.

These tests were administered to 2,545 boys and 2,195 girls in grades one through six from seven cities of southern Minnesota. Based on these scores, percentile norms were constructed; these appear in Tables 11-6-11-11. As the norm charts provide scores for each fifth percentile, the classroom teacher will need to interpolate when scores fall between these points.

TABLE 11.6

Percentile Norms for Johnson Fundamental Skills Test—Grade One

Percentile	Kick (pts.)		Pass-and-catch (pts.)		Jump-and-reach (in.)		Zigzag Run (sec)	
	B	G	B	G	B	G	B	G
100	34	30	34	29	11-5	10-5	8.0	8.8
95	28	27	26	23	9-0	8-5	9.2	9.4
90	27	26	24	21			9.4	9.9
85	26	25	23	20	8-5	8-0	9.8	10.0
80			22	19			9.9	10.4
75	25	24	21	18	8-0	7-5	10.0	10.8
70			20	17	7-5	7-0	10.2	10.9
65	24	23	19			6-5	10.4	11.0
60		22	18	16	7-0		10.6	11.4
55	23			15		6-0	10.8	11.5
50			17		6-5		10.9	11.6
45	22	21		14		5-5		11.8
40			16	13	6-0		11.0	
35	21		15	12		5-0	11.2	
30	20	20	14	11	5-5		11.4	12.0
25		19	13	10		4-5	11.6	12.2
20	19	18	12		5-0	4-0	11.8	12.4
15	18	16	11	9	4-5		12.0	12.6
10	17	14	10	8	4-0	3-5	12.2	12.8
5	14	10	9	5	3-5	3-0	12.8	13.4
0	12	8	6	3	3-0	2-5	13.0	13.6

B: Boys G: Girls

TABLE 11.7

Percentile Norms for Johnson Fundamental Skills Test—Grade Two

Percentile	Kick (pts)		Pass-and-catch (pts.)		Jump-and-reach (in.)		Zigzag Run (sec.)	
	B	G	B	G	B	G	B	G
100	36	35	39	35	12-5	11-0	7.6	7.8
95	33	33	38	31	10-0	9-5	8.0	8.2
90	31	31	34	28	9-5	9-0	8.4	8.6
85	30	30	32	27			8.8	8.8
80	28	29	31	26	9-0	8-5	8.9	9.0
75		28	30	25	8-5		9.0	9.4
70	27	27	29	24		8-0	9.2	9.5
65		26	28	23			9.4	9.6
60	26		27	22	8-0	7-5	9.5	9.8
55		25	26	21			9.6	
50	25	24	25		7-5		9.8	9.9
45			24	20		7-0		
40	24	23		19			9.9	10.0
35	23	22	23	18	7-0	6-0		10.2
30	21	20	22	17	6-5		10.0	10.4
25	20		21	16	6-0		10.1	10.8
20	19	19	20	15		5-5	10.2	
15	18	18	19	14	5-5	5-0	10.6	11.0
10	17	16	17	12	5-0	4-5	10.9	11.2
5	14	14	13	10	4-5	4-0	11.2	11.8
0	10	12	8	7	4-0	3-5	11.4	12.0

B: Boys G: Girls

TABLE 11.8

Percentile Norms for Johnson Fundamental Skills Test—Grade Three

Percentile	Kick (pts)		Pass-and-catch (pts)		Jump-and-reach (in)		Zigzag Run (sec.)	
	B	G	B	G	B	G	B	G
100	40	36	41	38	13-0	12-0	7.4	7.4
95	37	34	40	34	11-5	10-0	7.8	8.0
90	36	32	39	33	11-0	9-5	8.0	8.2
85	34	31	38	32	10-0	9-0	8.2	8.4
80	33	30	37	30			8.4	8.8
75			36	29	9-5	8-5	8.6	8.9
70	32	29	35	28			8.7	9.1
65	31	28	34		9-0	8-0	8.8	9.2
60	30	27	33	27			9.0	9.3
55		26		26	8-5			9.4
50	29	25	32	25		7-5		9.5
45		24	31				9.2	9.6
40	28		30	24	8-0	7-0	9.3	9.8
35	27	23		23			9.4	
30		22	29	22			9.6	
25	26	21		21	7-5	6-5	9.8	10.0
20	25	20	28	20	7-0	6-0	10.0	10.4
15	23	19	27	19	6-5		10.2	10.6
10	22	18	25	18	6-0	5-5	10.4	10.8
5	20	17	21	16	5-0	5-0	10.6	11.0
0	16	16	17	13	4-5	4-5	10.8	11.2

B: Boys G: Girls

TABLE 11.9

Percentile Norms for Johnson Fundamental Skills Test—Grade Four

Percentile	Kick (pts.)		Pass-and-catch (pts.)		Jump-and-reach (in.)		Zigzag Run (sec.)	
	B	G	B	G	B	G	B	G
100	42	39	50	43	15-0	14-0	7.0	7.2
95	38	37	47	40	13-0	11-0	7.6	7.8
90	37	35	45	39	12-0	10-5	7.8	8.0
85	36	34	43	38	11-5	10-0	8.0	8.4
80	35	33	42	37	11-0		8.2	8.6
75		32	41	36	10-5	9-5	8.4	8.8
70	34	31	40	35	10-0		8.5	9.0
65				34		9-0	8.6	9.1
60	33	30	39				8.7	9.2
55			38	33	9-5	8-5	8.8	9.4
50	32	29		32			9.0	9.5
45	31		37		9-0	8-0	9.1	9.6
40		36	31				9.2	9.7
35	30	28	35	30		7-5	9.3	9.8
30	29	27	34	29	8-5	7-0	9.4	10.0
25		26	33	28	8-0		9.6	10.2
20	28	25	32	27		6-5	9.8	10.4
15	27	24	31	26	7-5	6-0	10.0	10.6
10	25	22	30	24	7-0	5-5	10.2	10.8
5	23	20	27	21	6-5	5-0	10.6	11.2
0	19	16	23	16	6-0	4-5	10.8	11.4

B: Boys G: Girls

TABLE 11.10

Percentile Norms for Johnson Fundamental Skills Test—Grade Five

Percentile	Kick (pts.)		Pass-and-catch (pts.)		Jump-and-reach (in.)		Zigzag Run (sec.)	
	B	G	B	G	B	G	B	G
100	43	40	57	53	16-0	15-0	6.6	6.8
95	40	38	54	50	14-0	13-0	7.0	7.2
90	39	36	52	45	13-0	12-0	7.2	7.4
85	38	35	50	44	12-5		7.3	7.8
80	37	34	49	43	12-0	11-5	7.4	
75	36	33	47	42		11-0	7.5	
70	35		46	41	11-5	10-5	7.6	8.0
65		32	45	40	11-0		7.8	8.1
60	34	31	44		10-5	10-0		8.2
55				39				8.3
50	33		43	38	10-0	9-5	8.0	8.4
45		30	42	37			8.1	8.5
40	32		41		9-5	9-0	8.2	8.6
35		29	40	36			8.3	8.8
30	31	28	39	35	9-0	8-5	9.4	8.9
25		27	38	34		8-0	8.5	9.0
20	30	26	37	33	8-5	7-5	8.6	9.2
15	28	25	36	32	8-0	7-0	8.8	9.4
10	26	23	34	31	7-5	6-5	9.0	9.8
5	25	20	33	29	7-0	6-0	9.2	10.0
0	23	14	32	24	6-5	5-5	9.4	10.2

B: Boys G: Girls

TABLE 11.11
Percentile Norms for Johnson Fundamental Skills Test—Grade Six

Percentile	Kick (pts.)		Pass-and-catch (pts.)		Jump-and-reach (in.)		Zigzag Run (sec.)	
	B	G	B	G	B	G	B	G
100	44	42	59	55	17-5	16-0	6.0	6.6
95	41	40	58	51	16-0	14-0	6.8	7.0
90	40	38	54	49	15-0	13-0	7.0	7.2
85	39	36	53	47	14-0	12-0	7.2	7.4
80	37	35	52	46	13-5		7.3	7.5
75		34	51	45	13-0	11-5	7.4	7.6
70	36		50	44	12-5		7.5	7.7
65	35	33	49	43	12-0	11-0	7.6	7.8
60			48				7.8	7.9
55		32	47	42	11-5	10-5		8.0
50	34		46	41		10-0	7.9	8.1
45		31		40	11-0			8.2
40	33		45				8.0	8.3
35	32	30	44	39	10-5		8.1	8.4
30			43	38		9-5	8.2	8.6
25	31	29	42	37	10-0		8.4	8.8
20	30	28	41	36		9-0	8.5	9.0
15	29	27	40	35	9-5	8-5	8.6	9.2
10	28	25	39	33	9-0	8-0	8.8	9.6
5	26	20	37	31	8-5	7-0	9.2	10.0
0	23	15	34	28	8-0	6-5	9.0	10.5

B: Boys G: Girls

Latchaw Motor Skills Tests

Latchaw¹¹ has presented seven tests designed to measure selected motor skills of fourth-, fifth-, and sixth-grade boys and girls. Certain of these tests, or ones quite similar to them, have previously been described in this chapter. Consequently, only those which will evaluate other motor characteristics of boys and girls at this school level will be described here. The four tests thus selected are related to sports skills, as follows: basketball wall pass, volleyball wall volley, soccer wall volley, and softball repeated throws.

BASKETBALL WALL PASS. *Markings:* On a flat wall space, mark a target 8 feet wide and 4 feet high, at a distance of 3 feet from the floor. A restraining line 8 feet long is drawn on the floor 4 feet from the wall and parallel to the wall target. *Performance:* From behind the restraining line, the pupil throws a basketball into the wall target as rapidly as possible. The ball may be thrown in any way desired; if the ball gets out of con-

¹¹ Marjorie Latchaw, "Measuring Selected Motor Skills in Fourth, Fifth, and Sixth Grades," *Research Quarterly*, 25, No. 4 (December 1954), 439.

trol, he must recover it himself without assistance. A successful throw is one which goes into the target area from behind the restraining line; balls hitting on the target boundary lines are not counted in the score. *Scoring:* One point is given for each successful throw. After a practice trial of 10 seconds, two 15-second trials are given, the better of the two trials is the score for the test.

VOLLEYBALL WALL VOLLEY. *Markings:* The markings are the same as for the basketball wall pass test. *Performance:* The test is performed similarly to the basketball wall pass test, except that a volleyball is used, in the following manner: At the signal to start, the pupil tosses or throws the ball against the wall into the target area; rebounds must be batted rather than caught and thrown, the ball may be tossed against the wall when it is necessary to start it again. *Scoring:* One point is given for each correctly played ball into the target area from behind the restraining line. After a 10-second practice trial, four 15-second trials are given, the best of the four trials constitutes the pupil's score.

SOCCER WALL VOLLEY. *Markings:* On a flat wall space, mark a target area 4 feet wide and $2\frac{3}{4}$ feet high, which extends to the floor. An area of the same dimensions is marked on the floor, extending from and parallel to the wall target. The 4-foot line on the floor, farthest from the wall target, is extended 1 foot on either side, and constitutes the restraining line. *Performance:* From any place behind the restraining line, the pupil kicks the ball against the wall into the target area; as it rebounds, he continues kicking it repeatedly against the wall as rapidly as possible. The pupil may not touch the ball with his hands while it is in the rectangular floor area between the restraining line and the target, but must remove it by using his foot; other times, the ball may be recovered by use of the hands. A successful hit is one which is kicked with the foot into the target area on the wall from *behind* the restraining line on the floor; balls hitting on the target lines are not counted. *Scoring:* One point is given for each successful hit. One point is subtracted from the score each time the ball is touched with the hands when it is inside the rectangular floor area. After a 15-second practice trial, four 15-second trials are given; the best of the four trials is the score for the test.

SOFTBALL REPEATED THROWS. *Markings:* On a flat wall space, mark a target area $5\frac{1}{2}$ feet wide and at least 10 feet high, at a distance of 6 inches from the floor. A throwing area, $5\frac{1}{2}$ feet square, is marked on the floor at a distance of 9 feet from the wall. A backstop 12 feet long and $2\frac{3}{4}$ feet high (at least) is placed 15 feet in back of the throwing area. *Performance:* The pupil stands in the throwing area and throws the ball against the wall into the target area, using an overhand throw, as rapidly as possible. A successful throw is an overhand throw that goes into the target

area and is made from inside the throwing area; line balls are not fair hits. Balls out of control must be retrieved by the subject without assistance. Scoring: One point is given for each successful throw. After a 10 second practice trial, two 15-second trials are given; the better of the two trials is the score for the test.

The Latchaw motor skills tests were administered to fourth-, fifth-, and sixth-grade boys and girls in 21 elementary schools in Iowa and three in Illinois. Means were computed for each sex at each grade level and for the ages within each grade. However, scoring scales were not presented. Thus, those classroom teachers who find these tests interesting and useful will need to establish their own standards based on local testing.

Neilson-Cozens Achievement Scales

Neilson and Cozens¹² have developed achievement scales for elementary school boys and girls, starting at 10 years of age. The scales are for tests in the following skill areas: softball, basketball, soccer, track and field, and motor fitness items. Scoring scales for these events are given separately for each of the Neilson-Cozens classifications, as presented earlier in this chapter. The scales are based upon the six-standard deviation procedure, with special corrections applied for events found to have distributions with pronounced skewness.

SUMMARY

As in her various subject-matter fields, the elementary school classroom teacher should use appropriate tests in health and physical education. Such tests are needed to evaluate the physical, motor, and skill status of her pupils, so that teaching may be directed properly. The regular use of measurement is one of the most distinctive marks of a truly professional teacher. It is only through evaluation that the effects of teaching can be determined, that progress can be known, that individual pupils can be realistically helped. In this chapter, the purposes to be realized through measurement were presented.

Further, in this chapter, the criteria for judging the scientific worth of tests were considered. Then the availability of physical education tests, in particular, was discussed. And, the techniques of administering and scoring various types of tests were described, including measures of maturity, physical and motor fitness, and physical education skills.

¹² N. P. Neilson and Frederick W. Cozens, *Achievement Scales in Physical Education Activities for Boys and Girls in Elementary and Junior High Schools* (New York: A. S. Barnes & Co., 1934).

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Part Four



Administration

Chapter

12

Administrative Considerations

EVERY SCHOOL ADMINISTRATOR, including superintendents, principals, supervisors, and directors of health and physical education, knows the importance of and the need for planning and directing the school health and physical education programs. Good organization and administration are essential for the effective coordination and progression of these programs and to insure that all phases work harmoniously. This chapter will deal with various administrative considerations that should help the elementary school classroom teacher in her efforts to provide effective health and physical education for her pupils.

TIME ALLOTMENTS

Most state departments of education throughout the country have established minimum time requirements for health and physical education in their schools. Thus, the first step for elementary school administrators and classroom teachers is to determine whether such requirements exist in their state. While state regulations are certainly essential points from which to consider the time allotments in the elementary school, these regulations should usually be considered as minimums. Individual schools may find it desirable to exceed these minimums for the best interests of their children.

For physical education, children in the elementary grades should have 30 to 40 minutes of instruction daily. This allowance should not include time allowed for recess or for free-play activity before and after school. For the first three grades, physical education may be scheduled for one-half the time in the morning and the other half in the afternoon.

Actually, children of elementary school age should engage daily in

three to five hours of vigorous physical activity to insure their proper growth and development. The classroom teacher should urge her pupils to so participate after school, on weekends, and during vacations.

For health instruction, a similar time allotment should be made. However, much of the health materials can be integrated with other school subjects. Such integration is especially desirable in the primary grades. For the upper elementary grades, definite instruction periods should be scheduled, although some integration of health materials will still be desirable.

THE TEACHER

No educational program in any school is stronger than its leadership; no teaching process is ever stronger than the effectiveness of the teacher. Since health and physical education are frequently taught by the classroom teacher, her understanding of, belief in, and enthusiasm for them, and her ability to present the materials involved are of paramount importance in the realization of the educational and growth potentialities of these fields.

The teacher's preparation, of course, starts with her undergraduate training but, by no means, needs to end there. Thus, a major responsibility for the proper preparation of elementary school teachers to conduct adequate health and physical education programs rests squarely on the teacher-training institutions throughout the United States. Some success has been achieved, and additional gains are constantly being made in this direction as the basic importance of these programs in the growth and development of children is more and more realized by forward-looking and realistic educators in the collegiate institutions. However, there is still great need in all parts of the country for in-service courses, summer-school study, and expert consultant services in health and physical education.

The school system that engages a director of health and physical education, with responsibilities for elementary as well as secondary schools, can expect much better programs in these fields than would otherwise be the case. Further, these programs would be effectively coordinated from grade to grade, from elementary through high school. The problems of the classroom teacher in relation to both health education and physical education will be considered below.

Health Education

Some communities in the country hire health coordinators for their school system. These coordinators usually have responsibility for supervising and coordinating the entire health-education program of the schools, including the health service, health instruction, and the health-

ful school environment. In some communities, the health coordinator is selected by the superintendent or principal and the county health officer; in other communities, this selection is made by a committee of teachers from the elementary schools involved.

Among the duties typically performed by the health coordinator are the following:

1. Coordinate the health program of the schools.
2. Interpret the philosophy, objectives, program procedures, and results achieved to the community through a continuing public relations program.
3. Coordinate with the principal and teachers the emergency care and first-aid procedures for the school.
4. Assist in surveying the health needs of the school and community.
5. Help with the health counseling of the pupils.
6. Encourage teachers to keep a good set of health records of their pupils and to initiate satisfactory follow-up programs for those children found to have physical defects.
7. Aid the teachers with their classroom health instruction.
8. Cooperate with the physical education supervisor in the development of an effective physical fitness program for the school.
9. Coordinate the school's health education efforts with appropriate community and state health and safety organizations.
10. Work with the principal and teachers in scheduling those health services made available to the schools by medical and dental organizations and the public health department.

Physical Education

Physical education in elementary grades should be taught by personnel with sufficient preparation to do the job well. Some schools use special teachers of physical education. However, more schools rely on the classroom teacher, with, in many instances, the supervisory assistance of physical education specialists. In a survey of state departments of education, Humphrey¹ found that classroom teachers had responsibility for elementary physical education in 57 per cent of the states. In 40 per cent of the states, both classroom teachers and physical education specialists handled this program. In the latter group, specialists were employed for the most part in the larger communities; however, the classroom teacher still assumed major responsibility, especially at the primary level. In a survey of urban school systems, Schneider² found: that 60 per cent of classroom teachers of grades one to three and 48 per cent of grades four

¹James H. Humphrey, "The Status of Elementary School Physical Education," *Physical Educator*, 10, No. 2 (May 1953), 43.

²Elsa Schneider, *Physical Education in Urban Elementary Schools* (Washington, D.C.: U.S. Government Printing Office, 1959), p. 4.

to six teach physical education with the aid of specialists or consultants; that 26 per cent of classroom teachers of grades one to three and 16 per cent of grades four to six do not have the help of specialized personnel in physical education; and that special teachers are directly responsible for physical education in 12 per cent of grades one to three and 29 per cent of grades four to six. Thus, it is obvious that the classroom teacher is the essential person in the conduct of elementary school physical education throughout the United States.

The question as to whether the classroom teacher or the specialist should teach physical education in the elementary school has been debated for some time. Proponents in favor of the classroom teacher having this responsibility contend that: she has a better understanding of the physical, mental, social, and emotional problems of each child in her classroom; she is in a better position to integrate physical education with the other subject-matter areas of the curriculum; and this arrangement reduces the number of adult teachers with whom the small child must adjust, especially when starting school and during the first years. Advocates of the use of a physical education specialist in the elementary grades point to his superior grasp of the philosophy and objectives of this field, his much greater competency in the materials available, his stronger interest in and enthusiasm for physical education, and his ability to demonstrate and teach physical activities effectively.

Every effort should be made to upgrade physical education in elementary schools. Although there are many exceptions, the programs of these schools throughout the United States are inadequate, and, in far too many instances, they are nonexistent. This situation is a basic reason for the tragically poor physical fitness status generally of American children. No community can afford to wait until boys and girls reach secondary schools before attending to their physical fitness, as well as realizing other advantages of properly conducted physical activities.

The in-service improvement of classroom teachers through physical education lectures, demonstrations, clinics, and extension and summer school courses is a most realistic need in many school systems. In larger communities, at least, well-qualified physical education specialists should be engaged to assist classroom teachers in their efforts to plan and conduct effective programs in this field. Ideally, a consultant or supervisor of physical education should be provided in each large elementary school, or one in every two medium-sized elementary schools.³ In smaller communities, the supervisory help of state department physical education personnel may frequently be obtained upon request. Or, two or

³ Department of Health Education, Physical Education, and Recreation, California State Department of Education, "Who Should Teach Physical Education in the Elementary Grades," *Journal of Association for Health, Physical Education, and Recreation*, 34, No. 8 (November 1961), 8.

more small communities may combine to provide a physical education consultant.

THE ADMINISTRATOR AND THE HEALTH PROGRAM

In initiating and developing the elementary school health program, the school administrator should assume the following responsibilities:

1. Recognize the need for health education in the school curriculum.
2. Assume the initiative in developing and organizing the health program.
3. Hire a well-qualified health coordinator to aid in the administration of the health program and to insure that it functions properly.
4. Obtain the necessary funds for the health education budget.
5. Evaluate the school health program periodically and recommend improvements to the school board.
6. Encourage teachers to use a variety of health instructional techniques.
7. Involve the teachers in formulating an in-service training program in health education.
8. Use faculty meetings to discuss ways by which health instruction may be improved.
9. Conduct research projects in various health areas and grade levels in an effort to improve instruction.
10. Acquire and administer standardized tests available in health education in order to discover the strengths and weaknesses in the health content of the elementary grades.
11. Provide the most modern audio-visual materials for health teaching by the classroom teachers.
12. Organize health orientation seminars for new teachers.
13. Provide for courses of study to aid the teachers in their health instruction.
14. Allow time for teachers to attend professional health education meetings in their state and community.
15. Encourage the teachers to read professional health articles and books to aid them in their teaching.

SCOPE OF THE HEALTH PROGRAM

A topical recapitulation of the scope of the health program as presented in this book for the elementary school classroom teacher is given below. The organization plan for health varies according to the various local school systems. A common organizational structure, however, is presented in Fig. 12.1.

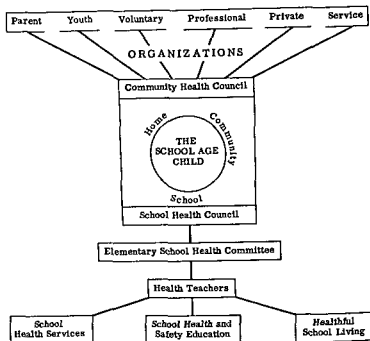


FIG. 12.1 *Elementary School Health Program Organizational Structure*

School Health Services

1. Medical and health examinations of pupils before entering school and at the fourth and seventh grades. Most examinations are conducted by the family physicians.

2. Dental examinations. Parents are generally responsible for these examinations, although some school boards and community service clubs help, especially with needy cases.

3. Teacher observations of the pupils in the classroom, including screening for vision and hearing defects, weighing, and measuring for height.

4. Record keeping. A permanent health record card for each pupil, accident report forms, and other record forms should be maintained by the school system.

5. Special health services available at local and state level. Such services are available from the board of health, various health organizations, service clubs, and voluntary health agencies.

6. Communicable disease control. Usually, communicable disease control is a cooperative venture involving the health department, school system, teachers, nurse, and other school health personnel.

7. Exclusion and transportation of the sick and injured students.
8. First-aid and emergency care.

Health Instruction

1. Content arranged and taught to meet the needs and interests of the students.
2. Adequate health materials, including audio-visual aids.
3. Time provided the classroom teachers for health teaching.
4. Encouragement of teachers and school officials to realize the necessity of good health instruction in the school curriculum.
5. Evaluation of the health instruction program.

Healthful School Living

1. Provision of a healthful school environment.
2. Good sanitation of the school plant.
3. Good sewage disposal system.
4. Safe environment.
5. Good equipment in seating, lighting, heating, and ventilation.

COMMUNITY HEALTH AGENCIES

The administrator and the classroom teachers need to understand the community health agencies that stand ready to help the school with many of its health problems. The diagram presented in Fig. 12.2 will indicate such organizations which are typically available. This chart is used in an introductory health education course at the University of Oregon in presenting to the students the health careers available in this field.⁴

The administrator and classroom teachers can receive a great amount of professional help for the school health program from the various allied health organizations. In the public health field, a sanitarian is available to aid the schools in their food and water health problems, and a public health nurse, who can help teachers in the interpretation of their pupil health observations.

The medical and dental associations have done pioneer work in supporting health in the schools. They are good supporters of pupil and teacher health. They have advocated health instruction in the school curriculum for many years. They have also given strong encouragement for better physical fitness programs in the schools.

The voluntary health organizations, such as the cancer and tuberculosis health groups, have issued pamphlets, films, and other materials

⁴F. B. Haar, *Health Careers in the Health Sciences* (Eugene, Oreg.: The Author, University of Oregon, 1963).

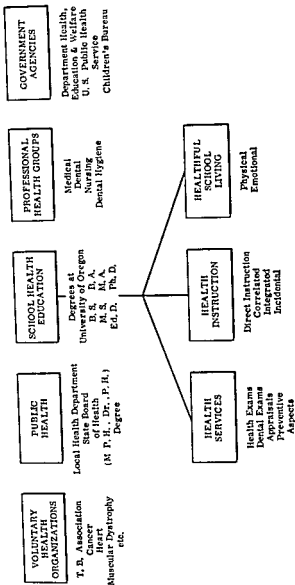


FIG. 12.2 *The Health Sciences*

for use in school health instruction classes. They have also developed health units in their areas for the use of teachers. They provide speakers as resource persons in health meetings.

The governmental organizations provide health services to the various states in the country through the states' public health departments. These organizations work closely with the local health departments in the various communities and provide funds and consulting services to the public schools.

SCHOOL HEALTH NURSE

Schools that can provide the services of a school health nurse are money ahead as far as the health of their pupils is concerned. This nurse can perform many key functions in the school health service program, as will be seen later in this section.

If the situation is such that a school nurse cannot be engaged, the next approach would be to contact the public health department. Frequently, a joint budget between the school board and the health department can be arranged so as to provide school nursing services.

While local adaptations may be necessary, the school nurse usually performs the following duties:

1. Assists administrator and teachers to develop a well-organized school health program.
2. Plays an important part in the development of objectives and policies for the health program.
3. Assists teachers in conducting vision and hearing screening tests and in taking periodic height and weight measurements of all pupils.
4. Aids teachers in interpreting the results of health tests to the children's parents.
5. Helps with first-aid treatment and in emergency care required by unexpected illness.
6. Maintains the school's health record system and coordinates notification of parents following medical and dental examinations.
7. May visit the homes of children, when their health problems are sufficiently acute, in order to solicit appropriate parental cooperation and action.
8. Helps with coordination of the health program between school and community.

The qualifications and educational preparation of school nurses vary in the various states throughout the country. Usually, however, school nurses are registered nurses with certification to teach in the schools. A great many of these nurses have completed the requirements for the bachelor's and master's degrees in health education, and some have sought the doctorate in this field. Other school nurses have achieved the

Master of Public Health degree in public health nursing from universities approved by the American Public Health Association.

HEALTH RESPONSIBILITIES OF CLASSROOM TEACHERS

Among the responsibilities of the classroom teacher in the conduct of the health programs in the elementary school are the following:

1. Inspect for symptoms of communicable diseases and for the cleanliness and neatness of her classroom.
2. With the assistance of the nurse and administrator, excludes pupils whom she suspects of having a communicable disease.
3. Prepares the pupils for the health examinations and utilizes this process as a learning experience in health education.
4. Refers to the nurse and to the parents any pupils with deviations from normal, especially those who may need medical attention.
5. Sets an example for her pupils as related to good health attitudes and practices.
6. Assists her pupils in the development of good health attitudes and practices.
7. Carries on a satisfactory health instruction program in her classroom.
8. Keeps up to date on the most modern scientific aspects of health education.
9. Evaluates and helps correct conditions which are not conducive to a healthy environment.
10. Is alert to good safety practices in her classroom, on the playgrounds, and in the school generally.
11. Participates in pre-service and in-service health training, including special health courses and conferences devoted to health education subjects and problems.
12. When appropriate, consults with other school personnel, such as the physician, nurse, dental hygienist, dentist, psychologist, physical education supervisor, psychiatrist, and attendance worker, when available, in the interests of her pupils' health.

HEALTH ORGANIZATIONS AND ASSOCIATIONS

Administrators and classroom teachers may obtain health education assistance from many national professional organizations and associations. A brief description of a number of these follows.

American Association for Health, Physical Education, and Recreation

This national organization, through the personnel of its *Health Education Division*, promotes and coordinates the school health education

activities of its organization. It helps plan the health programs at the national conventions of the American Association of School Administrators, the National Association of Secondary School Principals, and the Department of Elementary School Principals.

This association provides consultation services to the public schools in all phases of health education. It cooperates with district and state associations in health and physical education. Three outstanding health texts that have been issued by this organization are: *Health Education*, *School Health Services*, and *Healthful School Living*. A monthly journal is published by the association, which contains articles pertaining to health, physical education, recreation, and athletics; further, a research publication is issued, known as the *Research Quarterly*.

The address for the American Association for Health, Physical Education, and Recreation is 1201 Sixteenth Street, N.W., Washington 6, D.C.

American Public Health Association

This organization is the largest public health organization in the United States, founded in 1872. It is devoted to the promotion of preventive aspects of health education and the improvement of public health practices in the United States.

The association promotes annual conventions, including sections on Dental Health, Engineering and Sanitation, Epidemiology, Food and Nutrition, Health Officers, Laboratory, Maternal and Child Health, Medical Care, Mental Health, Occupational Health, Public Health Education, Public Health Nursing, School Health, and Statistics. There are numerous committees studying and doing research on water supply, sewage control, milk, nutrition, foods, accident prevention, and maternal and child health. The association's publication is the *American Journal of Public Health*, a monthly magazine.

The address of the American Public Health Association is 1790 Broadway, New York 19, New York.

American School Health Association

This association was organized in 1927 by physicians who worked in the public schools. The members are such school health personnel as physicians, nurses, dentists, health educators, college teachers of health, school administrators, public health educators, and other medical specialists.

The organization meets annually in conjunction with the American Public Health Association. The association publishes pertinent and interesting articles in its *Journal of School Health*. Committees of the organization are constantly studying all phases of school health education.

The address of the American School Health Association is Room 617, 228 No. LaSalle Street, Chicago, Illinois.

American Medical Association

This organization, founded in 1847, has always been interested in promoting health and physical education in the schools. Beginning in 1923, the association published a popular health magazine called *Hygeia*; in 1950, the title was changed to *Today's Health*. The articles in this magazine are a great help to all teachers in keeping up to date on modern health problems. A weekly medical journal is also issued, known as the *Journal of the American Medical Association*.

The Bureau of Health Education of the association has promoted "Conferences on Physicians and Schools" since 1947. This bureau has consistently promoted school health education, including health examinations and health guidance. Its Committee on Health Problems in Education has worked cooperatively with the National Education Association. Some of the best pamphlets on sex education are published by the Bureau. Consultants in health education are maintained for service to schools, colleges, and universities.

The address of the American Medical Association is 535 North Dearborn Street, Chicago, Illinois.

Additional Health Organizations

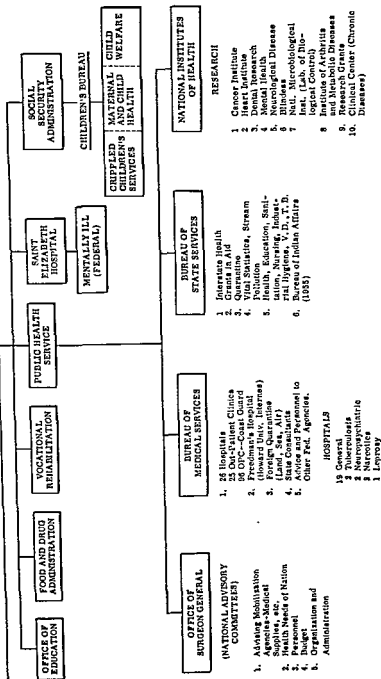
Many organizations exist in specialized fields that can contribute to the efforts of the classroom teacher in developing and conducting her health program. As these were presented in Chapter 6, they will not be described here.

United States Department of Health, Education, and Welfare

The United States Department of Health, Education, and Welfare was organized in 1953. A diagram showing the organization of this governmental agency is shown in Fig. 12.3. The main divisions consist of Office of Education, Food and Drug Administration, Vocational Rehabilitation Office, Public Health Service, Saint Elizabeth Hospital, and Social Security Administration. This department serves the health and welfare of the people of the United States. It helps the states with their public health problems, and through the states it aids local communities as well.

The Office of Education has a consultant service for the schools and has issued many publications dealing with various phases of child health. The Public Health Service grants money to the universities and medical schools for research in medical and health problems. The National Institutes of Health conduct and subsidize research in cancer,

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heart disease, mental health, blindness, and other areas. The Food and Drug Administration has analyzed many drugs for safe use by the public; it protects the public against fraudulent medicines and drugs. In these and many other ways, the Department of Health, Education, and Welfare contributes to the health of all people in America; the classroom teacher can well utilize the results of this thorough study and extensive work.

American Dental Association

This organization was founded in 1859. Each state has an affiliated organization, through which local groups are formed. Consequently, many communities throughout the country have contact with this organization. The dental association maintains consultant services for the schools and has published a great amount of materials for teacher use in health education. The association also conducts research in dental health. It has actively advocated fluoridation of public water supplies to prevent tooth decay.

The address of the American Dental Association is 222 East Superior Street, Chicago, Illinois.

RATING THE HEALTH EDUCATION PROGRAM

Administrators and classroom teachers should periodically evaluate the health program in the elementary schools. A study of the results of such an evaluation can lead to an identification of the program's strengths and weaknesses; appropriate steps may then be taken to improve and balance all aspects of health education in the schools.

Jackson⁵ has prepared a check list for evaluating existing programs in health education; this instrument appears in Table 12.1. It is based on accepted principles underlying a broad, functional program in this area. Some of the items apply more specifically to certain grade levels than to others; but, if reasonable care is exercised, the list may be used to survey the contributions of health education in the entire school system. The broad areas covered are administrative, curricular, instructional, and community.

The easiest way to rate a school after the check list is filled out is to compare the number marked "Yes" with the number marked "No" and "To Some Extent." To arrive at a numerical score, multiply each "Yes" by five and each "To Some Extent" by three; those marked "No" are given zeros. A perfect score for this list would be 110. If the school scores above 75, it would rate considerably above average in health education.

⁵ C. O. Jackson, "Let's Rate Your Health Education Program," *Journal of Health, Physical Education, and Recreation*, 26, No. 6 (September 1955), 29.

FACILITIES

If fully effective programs of health and physical education are to be conducted in the elementary school, it is obvious that adequate facilities will be needed. The extent of these facilities dictates to a degree the types of activities that may be taught. When new school buildings are being planned, their use as both an educational and a recreational center for the school community should be explored. The justification of health and physical education facilities for this dual purpose may thus be reinforced.

Indoor Physical Education Facilities

Ideally, each elementary school should have one or more gymnasiums and swimming pools, depending on the size of the school, and dressing and shower rooms for both boys and girls. The use of a swimming pool will not be considered in this book, as its operation requires trained aquatic personnel rather than classroom teachers.

The recommended minimum size of a gymnasium is 50 feet wide by 80 feet long, with a 20-foot ceiling. The walls should be of concrete or brick structure (not plaster); the floor should be constructed from hardwood; lights and radiators should be recessed; and sufficient storage space should be available. Bleachers should fold against the wall, to permit maximum use of floor space. The floor area should be arranged and marked for its fullest use by the largest number of children.

When a gymnasium is not provided, a large playroom would give good service for physical education. The playroom, however, would probably place some restrictions on the activities, owing to lower ceiling height, possibly plaster-wall construction, nearness of windows (unless protected), and the like. If a large playroom is not available, perhaps a vacant classroom or storage room can be utilized. Or corridor space may be used for "quiet" forms of physical activity.

If none of these indoor facilities are available, recourse would necessarily need be made to the classroom itself. The use of the classroom will be improved greatly if the seats are movable, so that they can be pushed to the sides during physical education periods. With the seats stationary in the classroom, of course, even greater restrictions are placed on physical activities. However, even in this unsatisfactory situation, exercises can be performed in the aisles, some games can be played and relays conducted, and stunts and tumbling can be performed in the areas at the front and rear of the room.

Outdoor Physical Education Facilities

Athletic fields and playgrounds constitute the necessary outdoor areas for physical education and recreation. Desirably, the elementary school

should have a space equal to a base of five acres, plus an additional acre for each 100 pupils. Thus, a school of 400 pupils should have nine acres for physical education and play purposes.*

When planning outdoor physical education facilities, the types of activities to be conducted on them should be considered. There should be an apparatus area, where horizontal bars, overhead ladders, traveling parallel bars, jungle gyms, and the like, are located. A surfaced area is needed with permanent lines painted upon it for court games and many of the mass games described in Chapter 9; center, side, and goal lines and circles are desirable. At least one turfed area is necessary for field games, such as softball, soccer, and touch football. Basketball goals and places for volleyball posts would be desirable on a paved area; combination soccer and football goals should be placed on the turfed area. Lighting of outdoor and play areas for night use should be considered if the school also serves as a community recreation center.

Health Room †

Every elementary school should have available a "health suite" where pupils can be sent in cases of emergency, such as accidents or illnesses. This suite can also be used for medical and dental examinations, vision and hearing testing, and health counseling. For administrative purposes, it is advisable to locate this facility near the principal's office.

It is recommended that the health suite have the following facilities: (1) Separate resting rooms for boys and girls, (2) waiting room, (3) medical examining room, (4) dental examining room, and (5) office space, especially for the school nurse. Ample storage space in the health suite should be provided for linens, blankets, and first-aid supplies. Cots should be available in the resting rooms.

PHYSICAL EDUCATION EQUIPMENT AND SUPPLIES

The term *equipment* refers to the more permanent materials, such as horizontal bars, overhead ladders, jungle gyms, backstops, and so forth. *Supplies* are expendable items, such as balls, bats, and the like. The physical education equipment and supplies needed in a particular school will necessarily be determined by the local program, facilities, and teacher-pupil interest. However, the equipment and supplies chosen for a school should be available in sufficient quantity so that all children can be continuously active.

From the standpoint of economy and efficiency, the central storage

* *Physical Education in Oregon Elementary Schools* (Salem, Oreg: State Education Department, 1953), p. 8.

† National Facilities Conference, *Planning Facilities for Health, Physical Education, and Recreation* (rev. ed; Chicago, Ill: Athletic Institute, 1956), p. 75

of supplies will be necessary for most schools. Thus, the same balls, bats, and the like, can be used constantly by different groups. When central storage is adopted, plans for issuing, checking, repairing, cleaning, and processing supplies must be worked out. It will undoubtedly be desirable to assign the over-all supervision of supplies to some responsible individual in the school system. Pupil leaders may be used to check supplies in and out for their own classes.

Equipment

A check list of desirable equipment is given below. This list is not exhaustive, but it contains the items frequently found on physical education facilities.

<i>Items</i>	<i>Outdoors</i>	<i>Indoors</i>
Horizontal bars	x	x
Overhead ladder	x	x
Basketball goals	x	x
Volleyball standards	x	x
High-jump standards	x	x
Balance beams	x	x
Combination football-soccer goals	x	
Softball backstop	x	
Jungle gym	x	
Equipment for lining fields	x	
Climbing ropes		x
Mats (4 by 6 feet)		x
Record player		x

Outdoor horizontal bars may be constructed of 1½-inch pipe; these may be set at 58, 68, and 79 inches above the ground. Overhead ladders may be located at heights of 66 to 72 inches above the ground for primary grades and 78 to 84 inches for the upper elementary grades. These may be set in cement, along with jungle gyms and other pieces of climbing apparatus, away from the various play areas.

Basketball backboards should be located along the sides of the hard-top area opposite each other, so as to allow maximum use by the largest number of children. For the small children, some backboards located lower than the regulation height will prove advantageous. Standards used for volleyball may be constructed of 2½-inch pipe to be slipped into 3-inch pipes sunk in the ground. The uprights may then be easily removed when not in use, thus allowing greater and safer utilization of the available play area.

Supplies

The number of supply items that may be listed for elementary school physical education programs is large. The items given below are quite selective, so should not be considered an exhaustive list.

Rubber bouncing balls, various sizes
Softballs
Footballs, junior and regulation sizes
Basketballs, junior and regulation sizes
Volleyballs
Soccer balls
Tether balls
Tennis or sponge balls
Beanbags, 6 by 6 inches (dried beans, peas, wheat, or sand)
Softball bats, small and regular sizes
Softball bases, outdoor and indoor
Softball catcher's mask
Jumping ropes
Wands
Indian clubs, or substitutes
Stepping benches
Ball inflator, with pressure gauge
Tape measure, 50 to 100 feet
Stop watch
Whistles

PHYSICAL EDUCATION ADMINISTRATIVE PROBLEMS

A number of administrative problems will confront the classroom teacher in the conduct of her physical education program. Several of the most common of these problems will be considered below.

Class Size

The physical education class should be of such a size as to permit efficient instruction. It should never be considered as a free-play period with the teacher present merely to prevent it from becoming a "free-for-all" period. Thus, this class should be the same size per teacher as for any other instructional class, around 30 pupils.

Scheduling Facilities

Each teacher should be able to depend upon a predetermined time and place for physical education instruction without conflict or interference. Careful scheduling will greatly increase the use that can be made of the facilities available. In fact, the more limited the facilities for physical education, the greater is the necessity for definite scheduling. Through cooperative planning by administrators and teachers, the use of facilities may be staggered in such a way as to get continuous use from them, without their remaining idle even during the passing of classes.

Classrooms, auditoriums, stages, and cafeterias, as well as gymnasiums, playrooms, and outdoor space, should be carefully considered in the

light of pupil-activity needs. Physical education facilities should be made available not only during regular instruction periods, but also before and after school, during recesses, and at lunch time.

A formula which has been found helpful in arriving at the number of teaching stations needed for physical education follows.⁸

$$\frac{\text{Total School Enrollment}}{\text{Class Size}} = \text{Number of Physical Education Classes to Be Scheduled Daily}$$

$$\frac{\text{No. of Physical Education Classes Daily}}{\text{No. Periods per School Day}} \times (\text{Scheduling Efficiency Weighting})$$

For example:

$$\frac{\text{School Enrollment: 300}}{\text{Class Size: 30}} = 10 \text{ Classes to Be Scheduled Daily.}$$

$$\frac{\text{No. of Classes Daily: 10}}{\text{No. Periods per School Day: 8}} \times 1.25 = 1.56 \text{ Teaching Stations Needed.}$$

Uniforms

When dressing facilities are available, pupils in the upper elementary grades, especially, should change to physical education or athletic clothing for physical education classes. In choosing appropriate uniforms, personal hygiene, freedom of movement, and cost economy are important factors to be considered. A common uniform for all pupils is not a necessity, although it is desirable from the standpoint of a pleasing class appearance. All pupils should definitely wear some type of rubber-soled shoes.

Showers

When facilities are available, time for showering after vigorous physical activity should be allowed, especially in the upper elementary school grades. For the woman elementary school teacher, a boy from the leaders' corps will be needed to supervise the boys' showers; for a man teacher, a girl from the leaders' corps will be necessary to supervise the girls' showers.

Preferably, towels should be furnished by the school. If this cannot be done, perhaps a service fee can be charged for school purchase of towels or each child can bring a towel from home. Laundering may be done by a commercial laundry, a school laundry, or, if towels are individually owned, at home. The towel and laundry service should be arranged so as to provide a clean towel for each pupil after each physical education class.

⁸ *A Guide for Planning Facilities for Athletics, Recreation, Physical and Health Education* (Chicago, Ill.: Athletic Institute, 1947).

Excuses

The only excuses from regular participation in physical education that the school should consider valid are for medical reasons; and these should be rarities if the program is properly conceived and conducted. The medical excuse should be reserved for those pupils who might be harmed by participation in vigorous physical activities. However, in many of these cases, a restricted-type activity program can be devised which would permit a handicapped or organically unsound pupil to participate safely. Some views on this problem were expressed in Chapter 7.

The medical excuse, of course, should be signed by a physician. For purposes of coordination and desirable centralization in handling these excuses, all excuses from family physicians should clear through the school physician. In order to assist physicians in making recommendations, the school should provide them with information regarding the nature of activities in the physical education program.

Temporary excuses from physical education may be issued by the classroom teacher, the school nurse, or the family physician. The reasons for such excuses would be minor illnesses (colds, and the like), injuries, difficult menstrual period for girls, and the like. Further, pupils returning to school after prolonged illnesses, accidents, or surgery should be observed closely for signs that they are not yet ready to participate in vigorous activity.

Records and Charts

The classroom teacher will want to keep some pupil records pertaining to her physical education program. An obvious record form to construct and maintain would be for test results. Chapter 11 was devoted to a presentation of tests for use in the elementary grades; obviously, this record card would be designed for the tests adopted by the teacher. These records are most valuable, as they show both the status of each pupil at any given time and the progress he is making.

Records and charts may be used effectively for pupil motivation. The test record card just mentioned is also motivational, as these results are convincing proof of the child's need; and progress checked from time to time has considerable motivational value. This approach is particularly effective in the teacher's effort to improve the physical fitness of her pupils.

Other records and charts can be used primarily for motivational purposes. Certain of these are based on individual improvement. Each pupil records his own achievement and progress. Two forms of this type of chart are:

1. *Chart of stunts*: Place all stunts to be taught to a given class on a chart. As each stunt is learned by a child, check it off.

2. *Self-testing chart*: Pupil performances of a great many physical education activities can be measured. After selecting appropriate events of this type, list them on a chart. Permit the children to test themselves on these events at set times; enter their performances on the chart. Individual graphs could also be devised. Examples of self-testing events are: chinning, sit-ups, rope climb, overhead ladder travel, jumping distance, throwing or kicking distance, running time, baskets scored, dribbling time, and many more.

Class records may also be a source of great interest to the pupils. Each classroom could set up championship records, separately for boys and girls, in a number of selected events (such as those listed for the "self-testing chart" above). Initially, the pupil with the highest score in each event is listed on the chart, together with his or her achievement and the date. As these records are subsequently exceeded, new champions are listed. Annual championship records can be kept, as well as all-time records, continued indefinitely. This type of record can be extended to grade championships in schools with more than one classroom for the same grade.

PHYSICAL EDUCATION CURRICULAR PROBLEMS

The elementary school classroom teacher is faced with several curricular problems in establishing her physical education program effectively. Certain of these problems will be discussed here.

Separation of Sexes

As shown in Chapter 2, the average growth patterns of boys and girls have reached a fairly steady state in physical, physiological, and neuromuscular measures by the time they enter the first grade. For many of these measures, appreciable differences do not exist between the sexes. These similarities are continued for each age until the girls reach puberty.

However, a number of sex differences in growth characteristics do occur. These differences are related to arm length, width-length proportion, energy output, muscular strength and endurance, jumping-running-throwing performances, and physique type; all of these favor the superiority of boys in physical activities. Further, as puberty is reached—especially for girls, as they reach it first—differences between the sexes become pronounced.

As a consequence of these observations, two principles affecting the scheduling of boys and girls for physical education were promulgated in Chapter 2. These principles are repeated here for purposes of emphasis:

1. While boys and girls in the early grades may profitably participate together in some physical activities, such as rhythmic, mimetic, conditioning exercises, and the milder play forms, they should be separated for the more vigorous activities involving endurance performances, muscular power events, and all-out sports activities.

2. Boys and girls should definitely be separated for physical education from at least the fifth grade on; occasional coeducational activity of a social nature, such as folk dancing, social dancing, and appropriate informal games, may be desirable.

The classroom teacher, of course, would find it much easier to present physical education activities to her class as a group, rather than separating boys and girls. In the first four grades, many activities can be effectively performed by boys and girls together. During times of vigorous muscular strength and power activities and various all-out efforts, the boys and girls can be separated within the class itself. The teacher will then need to supervise both groups simultaneously and alternately provide them with instruction, this process would be made much easier if pupil leaders were utilized, as discussed later.

For the fifth and sixth grades, where the separation of the sexes for physical education is a regular practice, the suggestions just made for the lower grades would be more difficult to carry out. It could, of course, be done, especially with aid from a leaders' group. However, for these grades it might be feasible to schedule two classrooms for physical education at the same time; one teacher would then take the boys' instruction and the other would be responsible for the girls' program.

Ability Grouping

Again, in Chapter 2, much emphasis was placed on the nature and extent of individual differences of boys and girls of the same age. These differences permeate the organism; they are related to maturation, physique type, body size, physiological systems, muscular strength and endurance, and athletic ability. The significance of these differences in physical education performances was demonstrated. Thus, growth characteristics usually described as averages should be considered as merely typical ones for any age, and not as indicating the status of all children at a given age. Realistically, the bald assertion that a boy or girl is a particular age is hopelessly vague in most contexts.

As a result of these observations, four principles for application to physical education were formulated in Chapter 2. For purposes of stressing them, these principles are repeated here.

1. The classroom teacher should be alert to individual differences and should evaluate them insofar as she can.

2. The motor performance expectations of boys and girls should be

judged, in part at least, from a realization of their strengths and weaknesses, especially as they apply to maturity, physique, and structural characteristics.

3. Certain basic traits (muscular strength, muscular endurance, and circulatory endurance) can be improved through physical education.

4. Means should be found for the effective grouping of children for and/or within physical education classes in order to provide reasonable homogeneity of motor potentialities.

In the last of these principles, as related to homogeneous grouping of pupils for physical education, a definite curricular procedure was proposed. In addition to the reason given, to allow for individual differences, Clarke⁹ has indicated other values for this practice. These values are as follows:

1. *Pedagogical advantages.* Ability grouping brings together pupils of nearly equal competencies, all of whom are ready for instruction on approximately the same level. Such grouping is more important in physical education than in scholastic phases of the educational program, as the manner of a boy's, or girl's, participation in many physical activities—what he does, how he reacts—depends to a large extent upon his *actions* and the *actions* of the other participating.

2. *Desirable attitudes.* The development of desirable attitudes toward physical education depends to a large degree upon the amount of individual skill acquired by the participant and upon satisfying experiences in the activities themselves. With ability grouping of pupils, opportunities for individual success are increased. Under such conditions, pupils compete with equals and thus have the satisfaction of extending themselves and their opponents and of winning a fair share of contests.

3. *Social development.* When competing individuals or teams are evenly matched, players are more active, cooperation is essential, and initiative and courage are necessary requisites to playing the game successfully. In fact, all of the physical, mental, emotional, and social qualities of the pupil are at a premium when playing hard-fought, closely contested matches.

Ability grouping of pupils for participation in physical education activities may be accomplished by objective tests or by judgments.¹⁰ Certain of the tests presented in Chapter 11 can be utilized for this purpose, especially those related to general motor ability or specific skills (when those skills are being taught). If judgment is used, teachers may form the groups after sufficient observation of their pupils so that sound opinions of the pupils' abilities can be made. Or the pupils themselves may judge each other's competencies. In either event, changes in the

⁹ H. Harrison Clarke, *Application of Measurement to Health and Physical Education* (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959), pp. 247-251.

¹⁰ *Ibid.*, pp. 279-282.

groups should be made from time to time as the need becomes apparent.

As was stressed in Chapter 7, physically unfit pupils should be identified and positive and constructive steps taken to improve their condition.¹¹ Further, this practice is strongly urged by the President's Council on Physical Fitness.¹² The grouping necessary here may be quite distinctive, as those pupils who are below accepted standards may be helped in various ways, including formation of a special group for part or all of their physical education classwork.

The problem of leadership, of course, must be faced if ability grouping of any sort is to be practiced, as there is a limit to the number of things a single classroom teacher can do during the same period. The solution lies in the utilization of pupil leaders and in teachers' combining classes, so that each can be responsible for a different group or groups.

Integration

Many opportunities exist for desirable integration, or correlation, of physical education with other subjects of the elementary school curriculum. Appropriately conceived, physical education materials can make valuable contributions to other study areas; and, conversely, the subject areas can broaden the understanding of physical education and its enrichment. Examples of desirable integration practices as applied to the elementary school follow. The classroom teacher will think of many more.

HEALTH. There are many obvious correlates between health and physical education. Among these are: the effects of exercise on physical fitness and, in turn, the value of physical fitness for health; the physiological changes caused by participation in various types of exercise; the importance of good health and good living habits to physical fitness and athletic prowess, the importance of recreation for living; and the effect of physical activity on mental health.

SAFETY. The need for safety practices in physical education is another obvious correlate. Safety instruction related to physical education, athletic, and free-play activities can be discussed in both health and physical education classes; surveys of physical education and athletic facilities for safety hazards can be easily planned and accomplished.

HISTORY. Many physical education activities have fascinating histories and were a part of many cultures in many lands. Particularly important from this standpoint are archery, track and field, folk and religious

¹¹ H. Harrison Clarke and David H. Clarke, *Developmental and Adapted Physical Education* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963).

¹² President's Council on Physical Fitness, *Youth Physical Fitness Suggested Elements of a School-Centered Program* (Washington, D.C.: U.S. Government Printing Office, 1961).

dances, boxing, wrestling, fencing, and stunts and tumbling. The histories of games of more recent origin are equally interesting; these include soccer, baseball, basketball, and football. And there are the sports and games of the ancient Greeks and Romans, the ancient and modern Olympics, the modern emphasis on physical fitness by the Russians, knighthood and its jousts, and the dances and sports of the American Indians.

MUSIC. Chapter 10 of this book dealt exclusively with rhythms and dances. The use of music is an essential adjunct to this form of physical activity; in the chapter, the recordings appropriate for the various rhythms and dances were consistently given.

ART. Physical education may be integrated with the classroom work in art by construction of posters, by making of costumes, and by preparing bulletin boards and other displays. Physical education can also contribute to art appreciation. Down through the ages, the human body has been the subject of art masterpieces, in both painting and sculpture. Athletic youth has frequently been portrayed for this purpose.¹³

LANGUAGE ARTS. Physical education materials make interesting subjects for both written and oral expression. Among the possibilities are the following: For reading, games descriptions, rules, and related materials and such classics with sports interest as *Robin Hood*, *Ivanhoe*, and *The Three Musketeers*; for writing, biographies of athletes and descriptions of sports events; for oral expression, demonstrations and explanations of physical education fundamentals and announcing of events; for creative expression, developing story plays related to the field; and for spelling, learning the words used in the physical education lesson.

SCIENCE. The correlates of physical education and science are nearly endless. With some study on the part of the teacher, integrations are possible in the areas of equilibrium, motion, application of force, friction, sound, force of gravitation, air pressure, and weather effects.

ARITHMETIC. Practical applications for the arithmetic processes of addition, subtraction, division, multiplication, and percentage computation can be made from physical education situations. Illustrations are: measuring performance, utilizing distance, time, and height and by relation to the physical education testing done; calculating averages for the class from tests performed; determining percentages, as related to batting, team standings, baskets scored, and the like; and geometric principles, as involved in the layout of fields and play areas.

The classroom teacher who would like a much more complete coverage of the integration of physical education with other subjects she teaches

¹³ Christopher R. Hussey, *R. Tait McKenzie: A Sculptor of Youth* (Philadelphia: J. B. Lippincott Company, 1930). The February 1914 issue of the *Journal of Health and Physical Education* is devoted to McKenzie's life and works.

may well consult a book written by James H. Humphrey, of the University of Maryland.¹⁴

Lesson Plans

The classroom teacher will readily recognize the need for lesson plans, as she customarily prepares them for her other areas of instruction. For a full realization of the potentialities of physical education, such plans are as necessary and should be prepared with as much care.

Planning for physical education in the elementary school should logically start with a long-range pattern. Any teacher, of course, can prepare a plan for a given year for her class, and this would be the minimum to be expected. A superior arrangement is for the teachers in a school to plan jointly for the physical education sequence to be followed from grade one through grade six. In this way, adequate progression can be achieved, undesirable duplication can be avoided, and a balanced program can be realized.

Once the long-range plan has been drafted, each teacher can then break it down into monthly, weekly, and, finally, daily lessons.

Visual Aids

In order to enrich, add interest, and improve instruction, the classroom teacher may wish to use visual aids in connection with her physical education program. Such visual aids are available in the form of motion pictures, filmstrips, and slides. The opaque projector may also be used to illustrate techniques appearing in current newspapers, periodicals, and the like.

Most teachers have had instruction and experience in utilizing various visual aids as a part of their regular classwork. As a consequence, it will only be said here that comparable practices are appropriate when using them for physical education.

General sources for motion pictures, filmstrips, and slides have previously been given in connection with visual aids for health and safety education. Thus, only film catalogues or listings of special value for physical education and sports will be given here, as follows:

Association Films, Young Men's Christian Association Press, New York, N.Y.

Athletics and Physical Education in Film, Audio-Visual Publications, Inc., Chicago, Ill., 1950.

Bernhard, Frederica, *Education Films in Sports*, Educational Film Library Association, New York, N.Y., 1945.

Educational Film in Sports, National Section on Women's Athletics, American Association for Health, Physical Education, and Recreation, Washington, D.C.

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PHYSICAL EDUCATION TEACHING PROBLEMS

Earlier in this chapter, the fact that most elementary school physical education programs throughout the United States are the responsibility of the classroom teacher was documented from recent surveys. Along with the numerous other responsibilities that are also the classroom teacher's responsibility, some means of lightening this load without loss (rather, with gain, if possible) of teaching effectiveness are sought. Suggestions pertaining to this problem will be made in this section.

Pupil Leaders

In a number of instances in this chapter and elsewhere, the need for pupil leaders to help the classroom teacher conduct her physical education program was mentioned. This is definitely a need, but the real value of and the justification for using such leadership should be assessed in relation to its effects on the leaders and on the pupils who are led. Actually, any leadership experience is valuable to the pupil who leads, as it gives him some understanding of the nature of authority and responsibility, provides him with experiences in personal-social relationships, and gives expression to and extends his competencies in physical education. For the other children, the acceptance of leadership authority is worthwhile, as both leadership and followership are essential in society.

Pupil leaders should be given instructions, training, guidance, and supervision commensurate with the duties they are to perform. Simple duties, such as caring for equipment and marking boundaries for games, require a minimum of preparation; while pupils who officiate games or who serve as demonstrator and instructor for physical education activities require a great deal more attention.

Generally speaking, pupil leaders should gradually progress to higher levels of responsibility. Thus, for example, a boy or girl may progress in the following order: (1) assume responsibility for the supplies needed for the physical education period or for marking the playing area for the game to be used on a particular day; (2) serve as monitor with responsibilities for supervising the washing and showering after class, making safety inspections, and the like; (3) act as assistant official, demonstrator, or instructor; and (4) officiate games and demonstrate and/or instruct exercises, stunts and tumbling, apparatus activities, rhythms and dances, and games and sports. This process should be continuous through the elementary grades rather than being confined to a single room at one time in pupils' elementary school experiences.

For those children who show ability to lead at higher levels, involving

officiating, demonstrating, instructing, and the like, a leaders' club may be formed. Such a club can be organized in a class or on an all-school basis. If on an all-school basis, quite possibly assistance in training the group may be obtained from the physical education supervisor or consultant, if there is one, or from the secondary school physical education staff.

The problem of providing pupil leadership for physical education may be more difficult in the primary grades, as these children may not be ready to give advanced-type leadership. If an all-school leaders' club has been established, children from the upper grades may be utilized to help out in the primary grades. This can well be a fine experience for the older children and a great help for the primary teachers.

Team Teaching of Elementary Subjects

The self-contained classroom is the traditional type of organization for teaching in the elementary school. This type of organization requires that the classroom teacher present all elementary subjects to the children in her class. Quite obviously, no one teacher can be equally qualified and able to teach all subjects; in fact, she may have definite deficiencies in some subjects. In recent years, team teaching in the elementary school has come into being in order to improve instruction by taking full advantage of each teacher's capabilities.

In a team program, instead of remaining the entire day with the same children, the teachers are formed into teams of various sizes, comprising from two to six or eight teachers. The plan utilizes a team leader, team teachers, and clerical aides; instruction is provided to a large group of children at more than one grade level. The teachers plan their program cooperatively. A team works flexibly, crossing subject lines, combining subjects when appropriate, and, in general, directing the program toward the children's abilities and needs.

The team teaching approach would permit the utilization of those teachers who are best qualified and most interested in physical education for instruction in this field. If possible, the provision of one physical education specialist in each elementary school would be most helpful in this process.

Physical Education Team Teaching

In 1953, a team-teaching plan for physical education was inaugurated in grades four, five, and six of one school in the Ontario (California) School District.¹⁵ This program gradually spread to the other 17 schools in the district and has been adopted elsewhere. The program has re-

¹⁵ Acknowledgment is made to Albert D. Colebank, Consultant, Health and Physical Education, Ontario School District, 950 West D Street, Ontario, California.

scheme, by choosing teams, by lot, or by other methods which the school may devise. Near-equal ability of competing individuals or teams is needed in order to maintain the interest of the participants. The program should be designed for all boys and girls—not just for the skilled. In the upper elementary grades, competition should usually be separated for boys and girls.

There are various ways of organizing intramural competition. The only ones described here are the round-robin league, elimination tournament, and double elimination tournament.

Round-robin League

In a round-robin league, each team plays every other team. This is generally the most satisfactory form of intramural competition, as the emphasis is on the most play for the largest number; the poorer teams are not promptly eliminated, so emphasis is not placed on participation for the better performers. However, the round-robin requires the greatest amount of time to complete. Probably, if more than six or seven teams wish to participate, it is best to form more than one league.

The number of games necessary to complete round-robin play may be determined from the following formula:

$$\frac{N(N-1)}{2}, \text{ in which } N \text{ equals the number of teams.}$$

Thus, with six teams:

$$\frac{6(6-1)}{2} = 15 \text{ games to be played.}$$

The process of drawing up a round-robin league for both an even number and an odd number of teams is shown in Table 12.3. It will be

TABLE 12.3
Round-robin League Organization

<i>Even Number of Teams (6)</i>					
Rounds:					
One	Two	Three	Four	Five	
1 vs. 6	1 vs. 5	1 vs. 4	1 vs. 3	1 vs. 2	
2 vs. 5	6 vs. 4	5 vs. 3	4 vs. 2	3 vs. 6	
3 vs. 4	2 vs. 3	6 vs. 2	5 vs. 6	4 vs. 5	

<i>Odd Number of Teams (5)</i>					
Rounds:					
One	Two	Three	Four	Five	
B vs. 5	B vs. 4	B vs. 3	B vs. 2	B vs. 1	
1 vs. 4	5 vs. 3	4 vs. 2	3 vs. 1	2 vs. 5	
2 vs. 3	1 vs. 2	5 vs. 1	4 vs. 5	3 vs. 4	

them wisely, and willing to accept personal responsibility for health; and
Whereas, Health instruction programs in schools and colleges offer a unique opportunity for the teaching of the necessary health concepts and principles to all of our people during their formative years; and

Whereas, The American Medical Association through its Joint Committee on Health Problems in Education with the National Education Association, its Department of Health Education, and other departments and councils has stimulated and supported such teaching; and

Whereas, Good health significantly assists the individual to achieve his optimum personal potential and to make his optimum contribution to community and national welfare; and

Whereas, In the current re-evaluation of school and college programs, it is important to give careful consideration to instruction in the science of healthful living in the curriculum, therefore be it

Resolved, That the American Medical Association reaffirm its longstanding and fundamental belief that health education should be an integral and basic part of school and college curriculum and that state and local medical societies be encouraged to work with the appropriate health and education officials and agencies in their communities to achieve this end.

School Physical Education

Whereas, The medical profession has helped to pioneer physical education in our schools and colleges and thereafter has encouraged and supported sound programs in this field, and

Whereas, There is increasing evidence that proper exercise is a significant factor in the maintenance of health and the prevention of degenerative disease; and

Whereas, Advancing automation has reduced the amount of physical activity in daily living, although the need for exercise to foster proper development of our young people remains constant; and

Whereas, There is a growing need for the development of physical skills that can be applied throughout life in the constructive and wholesome use of leisure time; and

Whereas, In an age of mounting tensions, enjoyable physical activity can be helpful in the relief of stress and strain, and consequently in preserving mental health; therefore be it

Resolved, That the American Medical Association through its various divisions and departments and its constituent and component medical societies do everything feasible to encourage effective instruction in physical education for all students in our schools and colleges.

SUMMARY

This chapter was devoted to various administrative problems commonly encountered by classroom teachers in conducting elementary school health and physical education programs. The satisfactory solution of such problems is essential if these programs are to proceed effectively. The problems considered were: Time Allotments; The Teacher; Facilities; The Administrator and the Health Program; Scope of the Health Program; Community Health Agencies; School Health Nurse; Health

Responsibilities of Classroom Teachers; Health Organizations and Associations; United States Department of Health, Education, and Welfare; Rating the Health Education Program; Physical Education Equipment and Supplies; Physical Education Administrative Problems; Physical Education Curricular Problems; Physical Education Teaching Problems; Intramurals; and Action by American Medical Association.

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